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Release Notes

I am the Firestarter

Greetings, *Maximum PC* readers. My name is Michael Brown. If you've been following *Maximum PC* since the beginning—way back in 1996 when this magazine was called *boot*—you might remember me as the magazine's founding senior editor. I was the guy who took a filing cabinet out into the office parking lot, stuffed it full of gasoline-soaked newspapers and Presto logs, and ignited it in an effort to test a fire-proof software safe.

The city fire department wasn't amused by the resulting conflagration, but the discs inside the safe came through the ordeal with all their 1s and 0s intact. Whether or not you remember me and my pyro antics, you deserve to know who's joining the ranks of the lucky few who've led this kick-ass magazine. It's a list that started with Brad Dosland, continued with Jon Phillips, and then segued to George Jones—each of whom, you might be interested to learn, I've worked for (and learned from) during my journalism career.

So why would any self-respecting PC fanatic leave *boot* magazine, just as it was building its legend? Well, I must confess that I was lured by the glowing dollar signs of the Internet boom: I left to join CNET Gamecenter as a technical editor in the late 90s, and I was that site's director when the Internet bubble burst and CNET decided to shutter the place. I later rejoined Future as editor of *EZ Tech Guide: Windows XP*, a *Maximum PC* sister magazine targeted at newbies.

But just as you never forget your first love, I've never forgotten the unmitigated joy I felt writing for the magazine that was destined to become *Maximum PC*. I've held editorial jobs before and since my days at *boot*, but that vaunted magazine is where I learned that the greatest possible service you can provide readers is to *not* hold your tongue—and that you *can* succeed in the publishing business by saying what you really think.

So where do I intend to take this magazine, now that I'm back, some nine years later? Don't worry, I won't mess with success. *Maximum PC* has a unique voice and a fantastic staff—including newly promoted executive editor Will Smith (congrats, Will!). But we're not going to rest on our laurels, either. Over the next several months, you'll see the magazine continue to evolve in its pursuit of excellence and truth. And as confident as I am that you'll like the results, I hope you'll give us plenty of feedback to help us in our quest.

Send emails and virtual Presto logs to michael@maximumpc.com. Let's burn this mother together.

—MICHAEL BROWN

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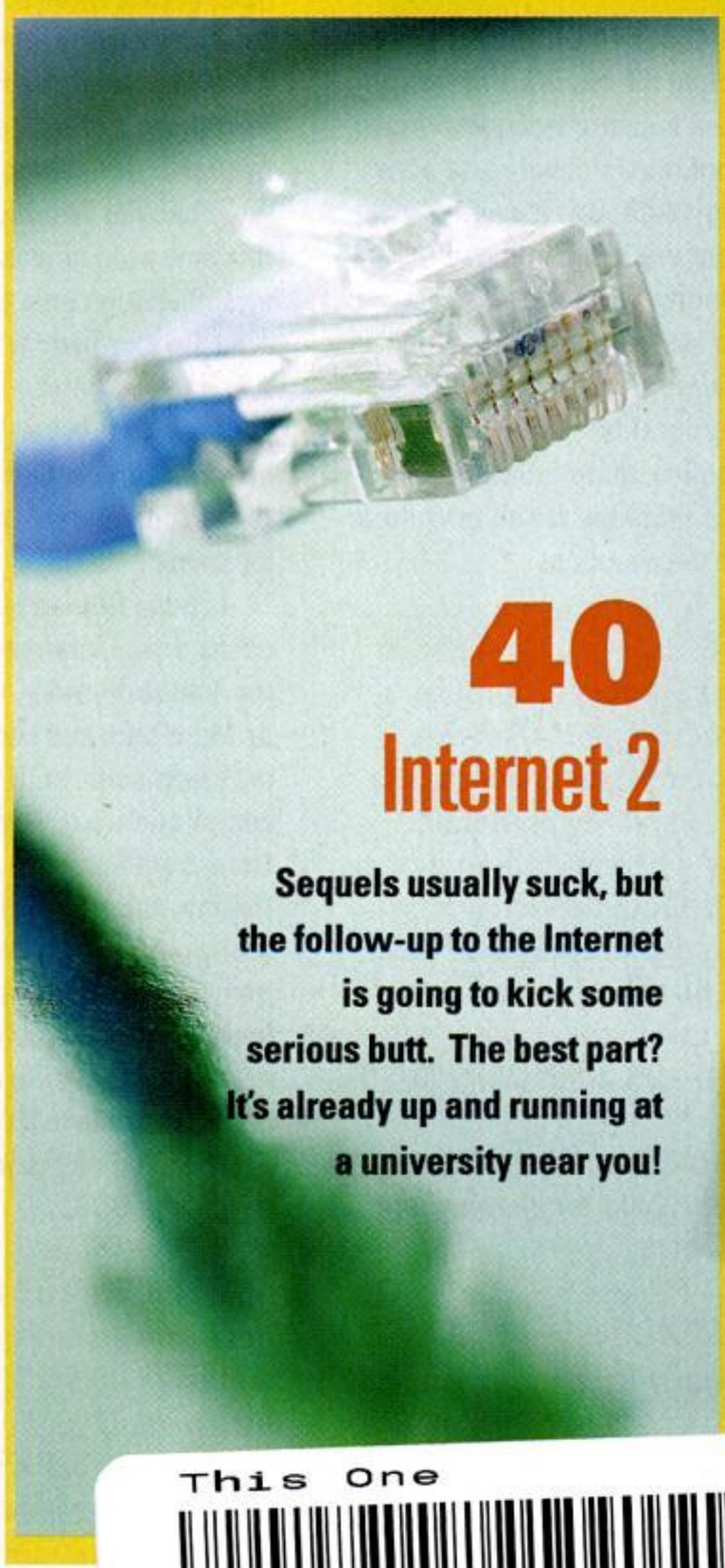
Your music, your movies, your way. Maximum PC stands up for your fair-use rights and shows you how to rip, encode, and take your media on the road.



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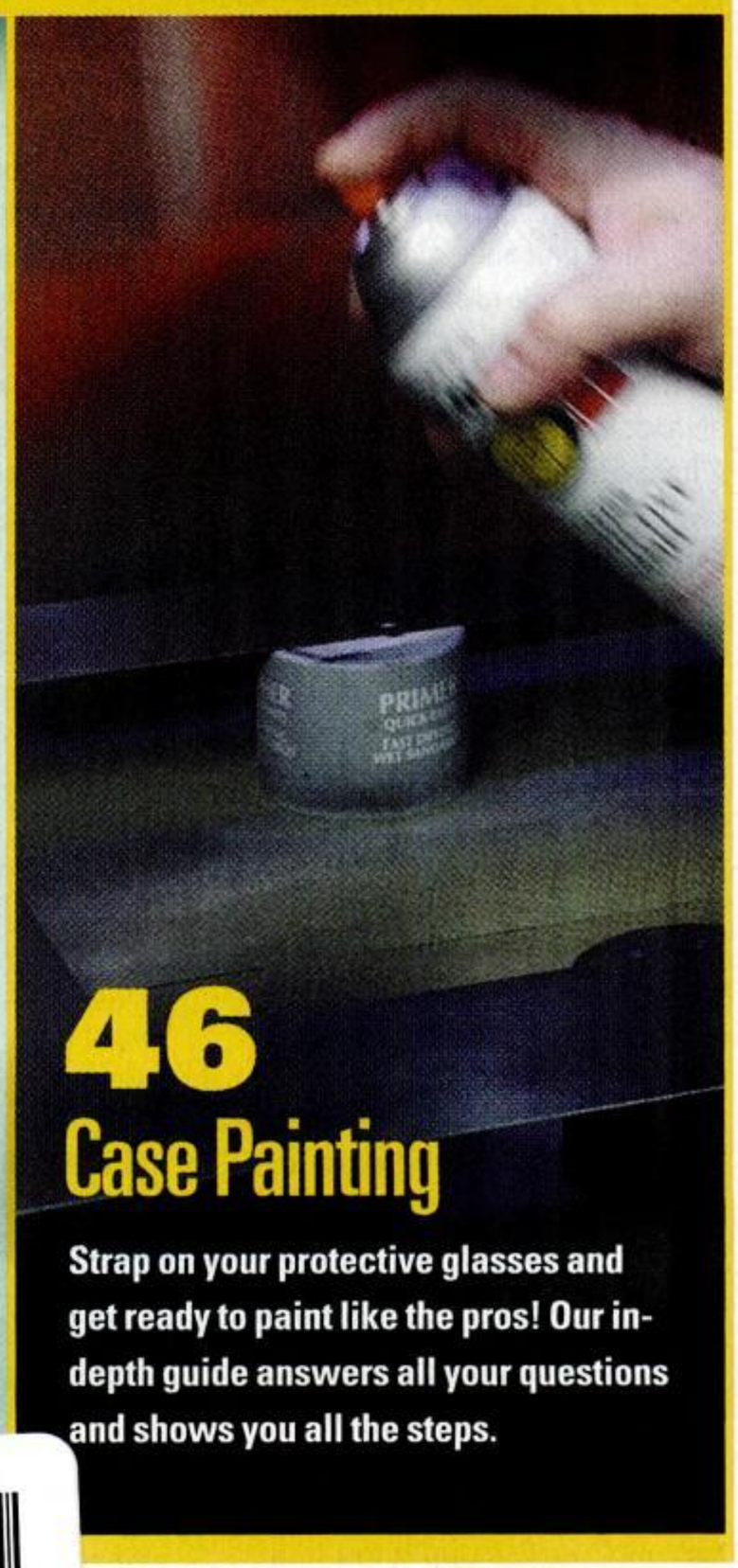
Internet 2
Sequels usually suck, but the follow-up to the Internet is going to kick some serious butt. The best part? It's already up and running at a university near you!



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Case Painting
Strap on your protective glasses and get ready to paint like the pros! Our in-depth guide answers all your questions and shows you all the steps.

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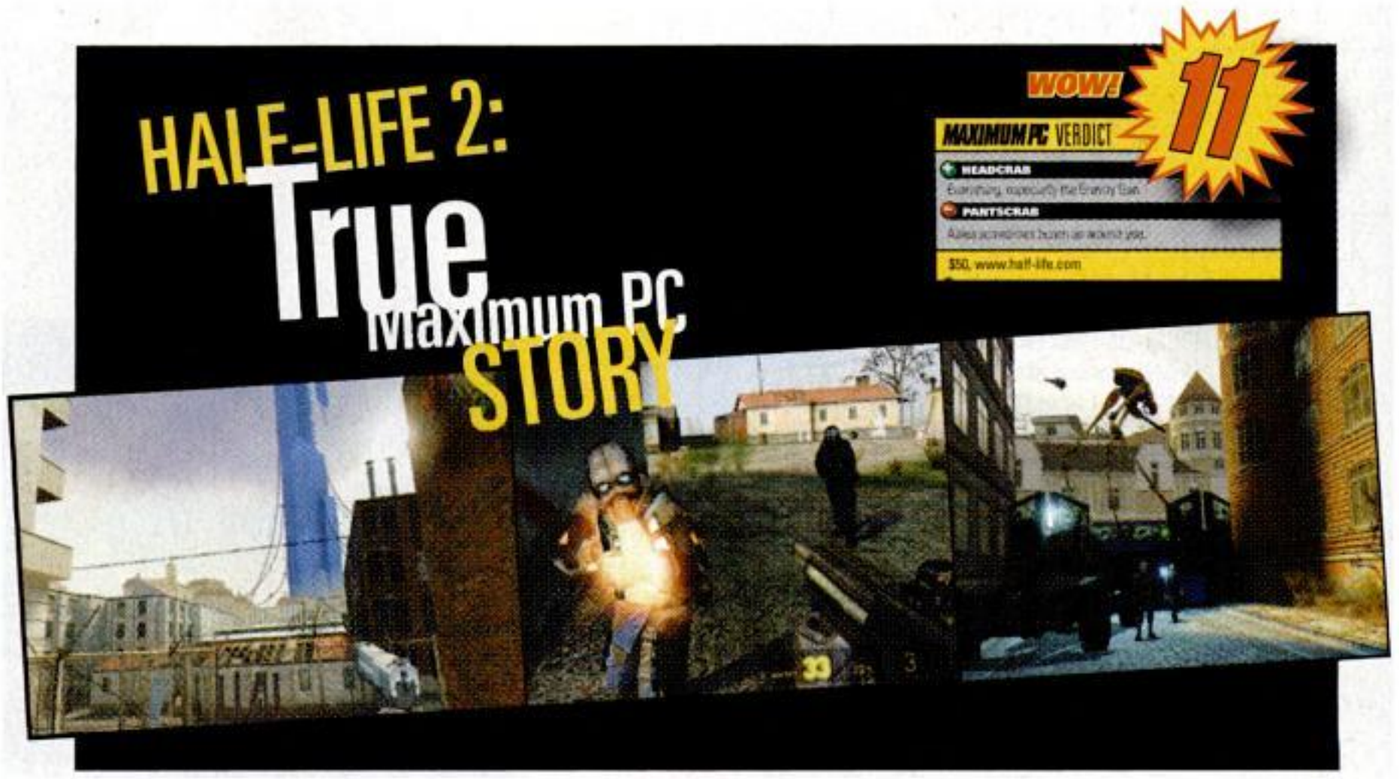

GAME-OLA?

Did Valve pay you guys to write the review of *Half-Life 2*? You gave it an unprecedented "11" score despite the widespread problems with game-stuttering that many people have experienced. I am one of the many HL2 owners whose game experience has been compromised by this problem. This is a major flaw affecting both Intel and AMD boards, and all manner of soundcards and videocards (including ones with 256MB RAM). Given your almost religious devotion to HL2, if you had researched the average user experience, you would have chided Valve for releasing such a buggy product and would have awarded it no greater than a 9 score (which is still in kick-ass range).

—NATHAN FRAZIER

ASSOCIATE EDITOR JOSH NOREM RESPONDS: We're sorry to hear you disagree with our verdict, Nathan, but we stand by our rating. We think *Half-Life 2* is the most groundbreaking game to hit the market since id shipped *Doom*. Due to our two-month lead time, we're often given the opportunity to review highly anticipated games, including *Half-Life 2*, before they're released to the retail channel. Let me emphasize, however, that we review only *final* code—the game we played was the exact same game that was initially sold to the public. The simple reason we didn't comment on the stuttering problem is that we never experienced it during our testing. After the game was finally released—which happened after the magazine had gone to the printer—we did encounter the stuttering issue in varying degrees on some PCs, but not on others. As for researching the average user experience, reviews aren't terribly useful if they're published *after* large numbers of people have already purchased the product.

POWER-SUPPLY TESTING

Maximum PC has always been a trusted source for information and product reviews, which is why we were very disappointed to read your "Stack 'em up, Blow 'em out" power-supply roundup in the January issue. There are no specific standardized industry PSU tests, only arbitrary "torture tests" conducted by individual experts. Many of the top gaming system manufacturers who have produced torture tests similar to *Maximum PC*'s, have not only approved the Ultra X-Connect for use in their systems, but also made X-Connect their preferred choice for performance builds. I encourage end users to try the X-Connect for themselves. The X-Connect has a three-year warranty for the simple reason that Ultra Products stands behind its product.

—MALSERT CHAPMAN, PR COORDINATOR, ULTRA PRODUCTS

EDITOR-IN-CHIEF MICHAEL BROWN RESPONDS: In the absence of standardized industry tests, *Maximum PC* will continue to develop its own methodology. Although it's entirely possible that we just happened to receive a faulty X-Connect PSU for testing, we stand behind our testing and our review as published. Thanks for pointing out Ultra Products' warranty policy; that's information we should have included for all the power supplies in the roundup.

HOT NUTS

Maximum PC's story "Laptops: Poaching Your Eggs?" [Fun-Size News, February issue] refers to the danger of "scrotal hypothermia" from using a laptop computer on your lap. It should correctly read "scrotal *hyper*thermia," as the heat generated by the laptop raises scrotal temps.

—DR. JOHN W. ROBINSON

EDITOR-IN-CHIEF MICHAEL BROWN RESPONDS: Thanks for clearing that up for us, doc!

I GO FOR PENGUINS

I was so happy to see a penguin in *Maximum PC*! I went through exactly what Will Smith did in last month's "The Linux Diaries" back in 1997. Since then, I've gone through all the stages of the Linux (ab)user, ranging from the irrational hatred of all things Microsoft, to treating Linux as a religious experience. But why didn't he mention Fedora Core? It offers better package management, a GUI installer (that even configures X correctly), oodles of add-ons, a full DVD installer from BitTorrent, and more. Why did he think Debian was better?

—RYAN CHIECHI

EXECUTIVE EDITOR WILL SMITH RESPONDS: Like you, I originally tried Linux in the late 90s. Back then I was really frustrated with the limitations and lack of information available on desktop Linux, so I went back to Windows. The key this time around was really giving myself enough time to futz around with the low-level OS, knowing when to walk away for a minute so I wouldn't get hyper-frustrated, and knowing how to find help online when I couldn't solve a problem on my own.

I chose Debian because it struck me as a nice intermediate between the "newb-friendly" distros (such as Mandrake and Fedora Core), and the really scary stuff that required compilation (e.g., Gentoo and Linux from Scratch). After using Debian, and later Gentoo at home, I really can repair a broken X install from the command line. If I hadn't learned what the different lines in my XF86Config-4 file do, I wouldn't have been able to fix it when the autoconfig didn't work right. Next stop: OS X.

JUST PAYIN' THE BILLS

I'm a *Maximum PC* subscriber and have always found the information very interesting and useful. Your writers are informative without being boring, unlike some other personality-free publications. I would like to know if the 14 pages used for advertising a hosting service are really necessary? I'd much rather see a few more product reviews or some more How-to's. I realize that advertising dollars are what makes the periodical world go round but, come on. How many more subscriptions would I have to buy to get rid of this mag-within-a-mag?

—JARED

OK, I could accept getting one AOL CD from you this year. But *two*? I'm sure that you're getting good money from AOL to include them (even if no respectable *Max PC* reader would use one), but I'd rather pay more for my subscription than get junk mail sealed in the magazine.

—LUKE CUSHANICK

I find it quite interesting that you accept full-page ads for the Ultra Products' X-Connect power supply when it received a verdict of "4" in your power-supply roundup. After all, you concluded that it exhibited "poor voltage accuracy, no active power factor correction, and it failed [your] load test." How is it that you let a product (or should I say a fiery money pit) be advertised in your magazines?

—CHRIS ROOSEN

EDITOR IN CHIEF MICHAEL BROWN RESPONDS: I'm sure you've heard all this before, but... Subscription fees and newsstand sales alone don't produce sufficient revenue to support any for-profit magazine. Advertisements—whether they take the form of pages inside the magazine, discs within the poly-

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COMING NEXT MONTH

IN THE CAT'S-OUT-OF-THE-ANTI-STATIC-BAG APRIL ISSUE OF MAXIMUM PC

ANALOG TO DIGITAL—AND BEYOND

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Having said that, *Maximum PC*'s ad-sales and editorial departments maintain strict separation of church and state: We don't tell them about review scores, and they don't tell us which companies are buying ads.

As for the 16-page ad for 1&1, there's a difference between a display ad and an insert. Display ads are counted as pages within the magazine; inserts are not. That means the insert doesn't impact the magazine's ad-to-edit ratio. We try to avoid placing inserts in the middle of stories, but that's not always possible. If the insert bugs you, you might consider tearing it out of the book or stapling those pages together, turning them into a single page turn.

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WE'RE GAIM

I enjoyed this year's Softy Awards and was happy to see that I own almost all the programs you honored. I also was impressed with GAIM because of its tabbed windows; so were the creators of Trillian, I guess, because Trillian version 3.0 now also includes tabbed windows.

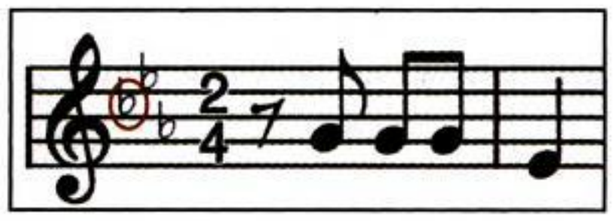
Maybe Trillian should be given a make-up Softy? Take all the bells and whistles that were carried over from the previous version (skins, emoticons, etc.) and add tabbed windows and some other cool new features (such as Instant Lookup via the Wikipedia) and Trillian 3.0 basic blows away GAIM.

—ADAM PERKOWSKY

EXECUTIVE EDITOR WILL SMITH RESPONDS: Unfortunately for Trillian fans, version 3.0 wasn't available when we went to press last month. Since shipping the February issue, I've spent a little time testing both the Basic and Pro flavors, and I have to say I'm very impressed. Although the basic version adds tabbed IM windows, we've had trouble getting them to behave in a way that we understand. The Pro version also adds Rendezvous IM, so we can message with Mac-based iChat users. Awesome!

We're becoming concerned, however, that Trillian's developers are adopting an "Everything *and* the kitchen sink" mentality: Features such as Wikipedia searching have absolutely nothing to do with instant messaging. That's why we stand by our selection of GAIM: It does one thing—IM—extremely well. Trillian 3.0 (or whatever the latest version happens to be) will get its shot next year.

TRAGEDY IN C MINOR

I couldn't help but notice your rendering of Beethoven's opening motif of his 5th Symphony in the January issue.

Fate knocking on the door is quite proper for the terrible tragedies on page 62; however, I just wanted to drop a line and say that the flat on the C-space is incorrect. Even though the piece is in C minor, the first flat is always on the B line.

—CARLOS LARA

EDITOR-IN-CHIEF MICHAEL BROWN RESPONDS: Congratulations, Carlos! You passed associate art director Boni Uzilevsky's musical IQ test.

NICE STACK!

The first issue in the stack is December 1997. I have not missed an issue since. I have a total of 86 issues, plus 6 special issues. It's not 100, but it's close!

—CLYDE ROBERTSON

PERIODICAL INFIDELITY

I'm sorry! I bought another brand of computer magazine. *ARGH!* I found my self yelling at the magazine. I won't mention it by name, but I will tell you that one of the articles mentioned a P4 750, and the editors recommended that you have at least 256MB of system memory if you're going to edit any video.

Need I say more? Next time, I'll just go back and read my latest issue of *Maximum PC* for the fifth time.

—ROBERT MARTIN

CUT, COPY, PASTE

➤ Our story on Microsoft's MSN Search (page 18 of the January issue) incorrectly reported that Google does not offer local search. Google has actually been beta-testing local search at www.local.google.com for some time.

➤ The table on page 14 of the February issue incorrectly reported that the average Internet connection enjoyed by users of Valve Software's Steam content-delivery system was 256Mb/s. The correct number is, of course, 256Kb/s.

➤ In our "Reading Into the Future" feature story (page 34 of the January issue), we incorrectly reported that Intel's 925 chipset supports the upcoming Port Multiplier technology. The fact is that Port Multiplier technology will supported in a future version of Intel's Advanced Host Controller Interface (AHCI). In that same story, we also incorrectly reported that hot swappability was "coming soon" to the SATA hard-drive spec; fact is, Intel's 925 chipset already supports hot swapping.

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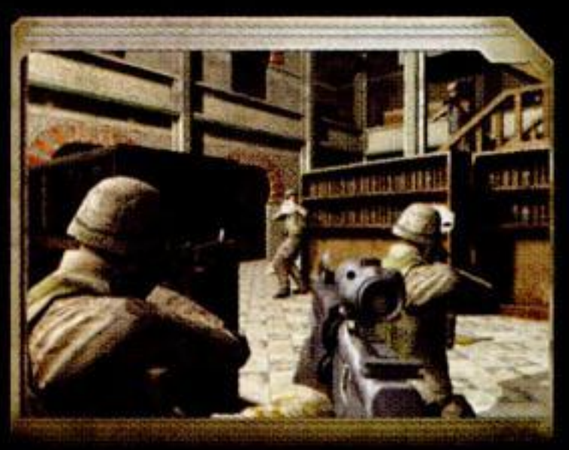

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TEEN T CONTENT RATED BY ESRB — Blood Violence

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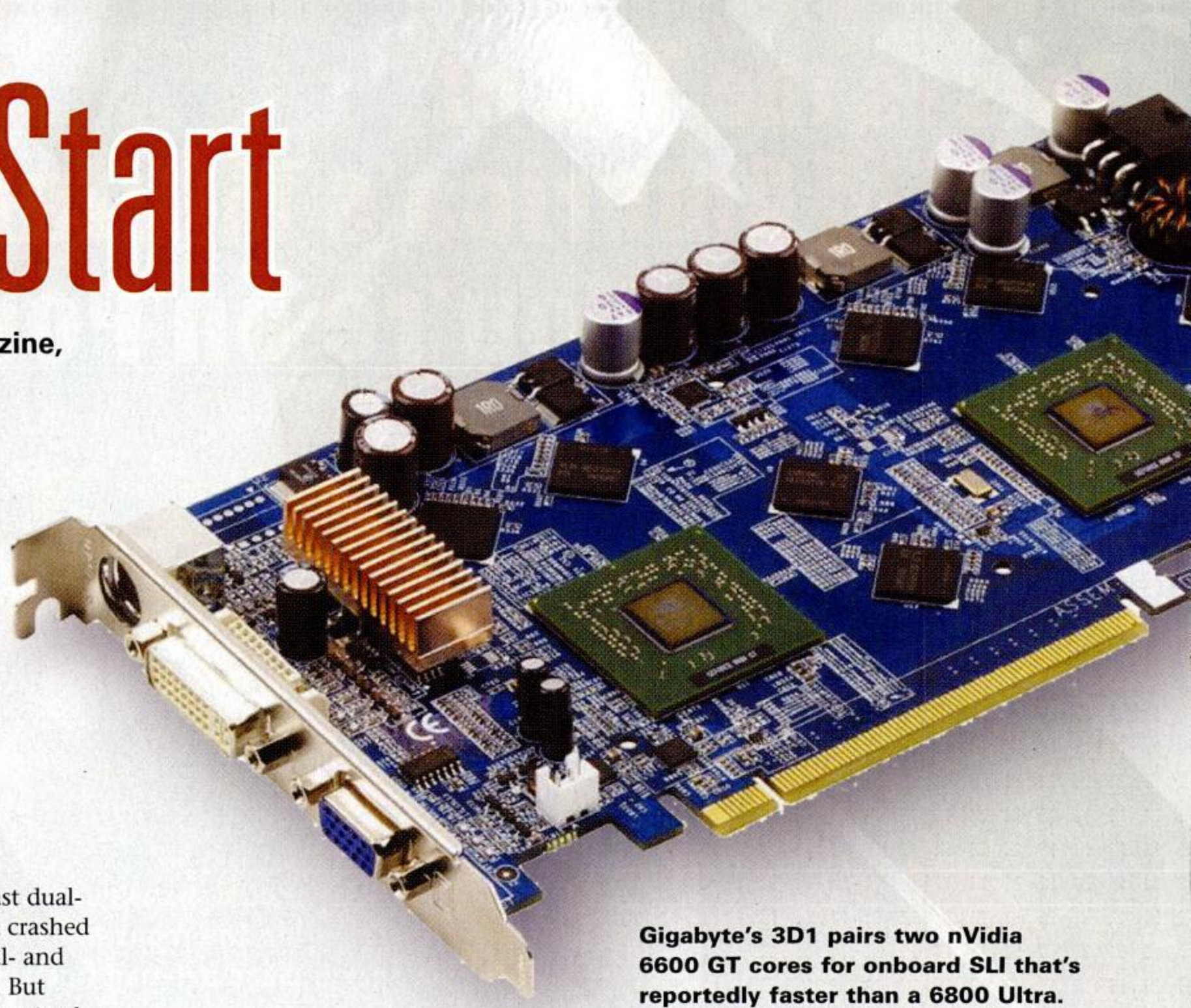
QuickStart

The beginning of the magazine, where articles are small



Gigabyte's 3D1 pairs two nVidia 6600 GT cores for onboard SLI that's reportedly faster than a 6800 Ultra.

Two GPUs—One Card

Who says you need two videocards to run SLI?

We thought we'd seen the last dual-GPU videocard when 3dfx crashed and burned, taking its dual- and quad-GPU Voodoo5 boards with it. But now that SLI and PCI Express have arrived, Gigabyte has taken the plunge and packed two nVidia 6600 GT cores onto a single PCB for single-card SLI action. Dubbed the 3D1, it's the first dual-GPU videocard to come along in a long time, and it promises to offer saucy performance—faster than the fastest single-card offerings from either nVidia or ATI. (As we went to press, images of a dual-6600 GT core card from Asus showed up on the Internet, but we have yet to confirm the card's existance.)

Though we weren't able to get our hands on a test unit prior to deadline, Gigabyte is claiming that the 3D1 will score more than 14,000 in *3DMark 2003* on an Athlon 64 3000+ test bench. To put that into perspective, a 6800 Ultra scores about 12,000 in a comparable test system. Keep in mind, however, these are Gigabyte's numbers, not ours.

Though a single 6600 GT core isn't all that exciting, when paired with another core its specs become more titillating. If you were to purchase a single 6600 GT, you'd be saddled with a lowly 128MB of memory, but the 3D1 features 256MB of GDDR III memory running at 600MHz, with both cores humming along at 500MHz. The card supports the usual inputs and outputs—DB-15, DVI, and S-Video out. Gigabyte also designed a special dual-fan cooling system just for this board. It sucks air in from the top of the card and exhausts it away from both cores along the card's horizontal axis.

At this point, you're probably thinking, "Sounds great, so what's the catch?" Unfortunately, there *is* a catch and it's a big one. Gigabyte isn't selling the card all by itself, but rather in a bundled package with its nForce4-based Socket 939 K8NXP-SLI motherboard. Also, preliminary reports show that this videocard will only work in this particular motherboard, so even if you bought one out of the back of a van in a dark alley, it probably wouldn't work with your current mobo. There is a bright side, though: The total package (mobo and videocard) is priced at $600. That may seem steep, but when you consider that a GeForce 6800 Ultra costs about $500 alone, $600 for a mobo and videocard doesn't seem too shabby.

Unfortunately, the 3D1 doesn't include the now-standard nVidia SLI connector, so rigging up two 3D1s for quad-GPU performance is out of the question.

By using modestly clocked 6600 GT cores, the 3D1 gets away with a single-slot cooling solution.

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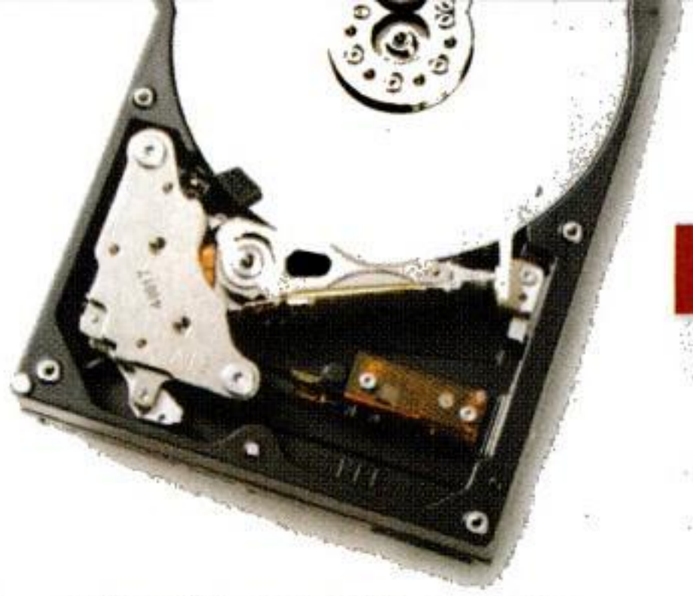
Hard Drive Capacity Records Smashed

Hitachi announces a 500GB Deskstar and a mini-microdrive



Hitachi breaks the capacity record once again with its new 500GB 7K500 Deskstar.

We haven't heard much from Hitachi during the past year, with the exception of its record-breaking 400GB Deskstar hard drive. Now that the 7K400's monstrous capacity has been matched by Seagate's 400GB 7200.8 drive, and the portable storage category is taking off like a rocket, the company is unleashing an onslaught of new drives with the intent of reclaiming the capacity crown in drives both large and small. Let's take a closer look at Hitachi's new offerings:

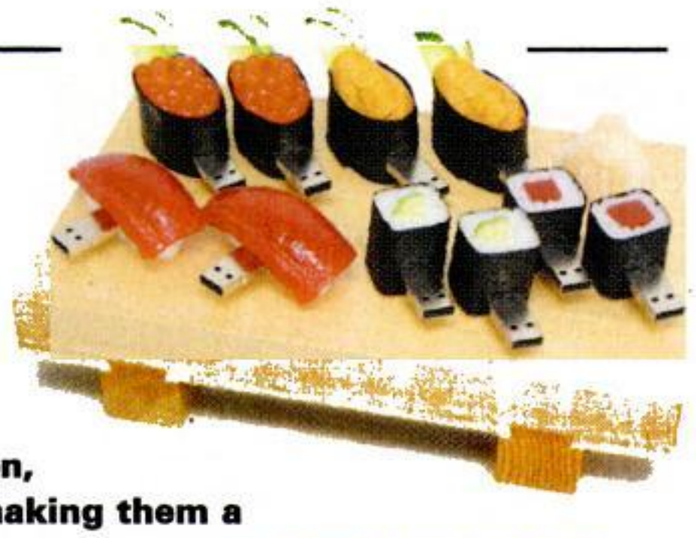
Deskstar 7K500: The cream of Hitachi's crop, this 500GB drive spins its platters at 7200rpm and utilizes a five-platter design. It boasts a 16MB buffer and will be the first drive to market to adopt the new SATA II features, which include the following: a doubling in available throughput, from 150MB/s to 300MB/s; Native Command Queuing (NCQ), which, when paired with an NCQ-capable host adapter, allows commands to be executed in the order deemed most efficient based on the proximity of the read/write heads to the requested data; staggered spin-up, to reduce the power draw when booting a multi-drive system; and hot-swap capability. The 7K500 will also feature a fluid dynamic bearing spindle motor. Sounds tasty!

It sounds like a brainteaser, but the new Mikey drive is both smaller and larger than its predecessor.

Deskstar T7K250: This 250GB drive sports incredible area density thanks to its two-platter design. It also supports NCQ and delivers 300MB/s of bandwidth. It will also support the SATA II features incorporated into the 7K500.

Mikey: The all-new mini-microdrive—nicknamed Mikey—is both smaller and thinner than its predecessor. The big news though is its record-breaking 8GB to 10GB capacity, which is more than twice the capacity of Seagate's new 5GB ST1 drive and more than double the size of the current 4GB Microdrive. This drive will certainly find its way into MP3 players and CE devices in the coming year.

Cuisine de PC



What these novel thumb drives lack in capacity they clearly make up for in "raw" performance. The 128MB hand-made devices are available in a variety of sushi types, including salmon, red tuna, sea urchin, and even maki, making them a must-have item for fans of seafood-based storage. $100, www.dynamism.com

Fancy notebook cases scream out "steal me!" so why not let people think your kick-ass laptop is nothing more than day-old pizza? The PowerPizza enclosure does just that, concealing your notebook and thus keeping it safe. The padded interior has room for a power cable, mouse, Parmesan cheese, and other accessories.

$24, www.humanbeans.net/powerpizza

FAST FORWARD BY TOM R. HALFHILL

Cell Secrets Revealed

After more than four years of collaborative development by engineers at IBM, Sony, and Toshiba, the first technical details about the new microprocessor destined for Sony's eagerly awaited PlayStation 3 are beginning to emerge. Code-named Cell, this super-secret chip boasts a number of innovative features destined to influence the evolution of PC processors.

Public patents reveal a lot about Cell. The most recent is U.S. 6,809,734 (57 pages long, plus 42 pages of figures). In addition, IBM is delivering five technical papers about Cell at a semiconductor conference in February.

From what we've been able to ascertain, Cell will be a CPU architecture designed for multi-core parallel processing, tight security, digital rights management (DRM), and grid computing over broadband networks. PC processors are already taking baby steps in these directions, but Cell is making a giant leap forward. It will be available in videogame consoles next year.

Even a low-end Cell chip might have eight parallel-processing cores, plus another core as a controller. Each parallel-processing core could have eight function units. In contrast, the most powerful PC processors in 2006 won't have more than two processor cores, with perhaps a dozen function units between them. The Cell patents portend higher-end chips with at least 64 processor cores and hundreds of function units.

Cell implements strong security at the chip level. Programs cannot freely access each other's memory, which will protect users against malware. But the same security features can also enforce DRM. Cell could prevent an unauthorized program from diverting a media stream into a file, for instance, which would foil today's Internet radio recorders.

The Cell patents describe grid computing as a standard feature. Today, grids are loose associations of PCs sharing a task over a network. In the Cell architecture, "software cells" are bundles of program code, data, and metadata that can migrate in search of execution resources. Software cells can circulate among Cell processors on a single chip, among multiple Cell chips within a system, or among many Cell-based systems on a network—including the Internet.

Cell is potentially much more than a videogame chip. IBM wants to spread Cell across the broadest possible range of devices, from cellphones to servers. No CPU architecture has ever been suitable for such a variety of systems. But then, no other CPU architecture has had the features of Cell.

Tom Halfhill was formerly a senior editor for Byte *magazine and is now an analyst for* Microprocessor Report.

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FUN-SIZE NEWS

ATI SLI FYI

Rumors are swirling that ATI has a home-brewed SLI concoction waiting in the wings for a Q2 release. According to TheInquirer.net, ATI's tech is named ATI Multi Rendering (AMR) and unlike nVidia's SLI solution, it will not require an interconnect card. ATI is reportedly preparing its very own motherboard chipset that will enable the technology.

YOUR PRINTER CAN RAT YOU OUT

If you're using a color laser printer, the device is secretly imprinting an almost invisible code on each document you print. This code can be used

to trace the document right back to your doorstep. Teeny, tiny, yellow dots are scattered all over your documents, but you'll need a UV light or blue LED to reveal them. This imprinting has been going on for a long time, but was only recently revealed to consumers.

BACKWARD-COMPATIBLE BLU-RAY DISCS COMING

JVC has created a three-layer optical disc that has a 25GB Blu-ray layer on top, with a dual-layer 8.5GB sandwich beneath. It can be used as a standard piece of DVD media today, and then as Blu-ray media once that technology becomes more widespread.

I See Dead Pixels

No more dead dots for Samsung

It's not uncommon for even brand-new LCDs to have a few dead pixels, but Samsung hopes to change that.

Hoping to end the emotional scarring and buyer remorse caused by dead pixels in its LCD monitors, Samsung's parent company has announced a bold "no dead pixel" policy for all LCDs purchased in 2005 and beyond. It goes something like this: If you buy a Samsung LCD and at any time in the first six months of ownership discover even a single dead pixel, Samsung will replace the display free of charge.

The new policy flies in the face of the typical dead-pixel policy LCD shoppers encounter these days, whereby a panel with up to 10 dead pixels is considered "normal," leaving the buyer no recourse under warranty. As you're no doubt aware, LCD panels consist of hundreds of thousands of individual pixels, and it's not uncommon for one or more of these teeny, tiny cells to stop functioning, causing them to appear white, black, or a combination of colors at all times. The only caveat to Samsung's otherwise generous policy is that it applies only to LCDs purchased after January 1, 2005. In other words, if you bought a 17-inch Samsung LCD with fewer than 10 dead pixels (five on a 15-inch model) in 2004, you're SOL. As we went to press, the U.S. PR rep for Samsung said the company is currently "investigating" how to implement the policy in the U.S. Dear Samsung: *Maximum PC* would be happy to help with the investigation in any way possible.

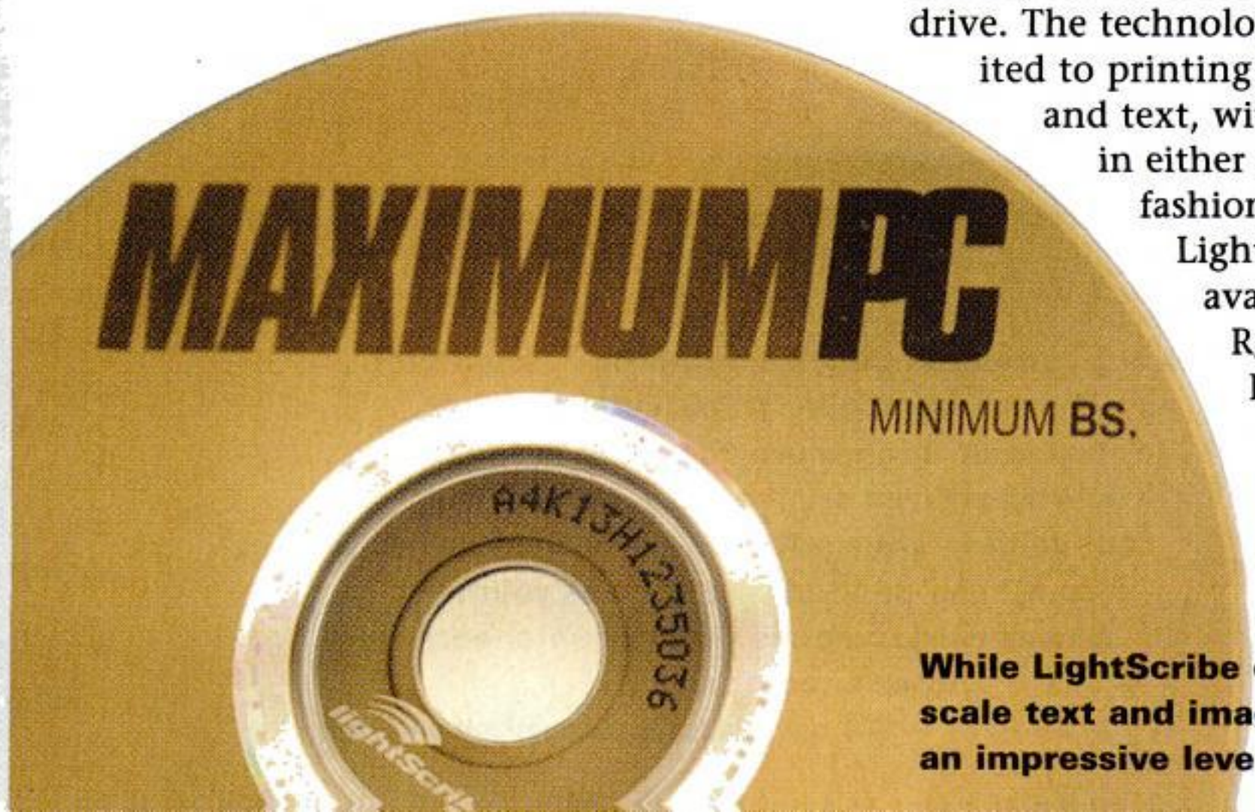
It's Time to Chuck Your Sharpie

HP invents cool disc-labeling tech

Let's face it: Using a Sharpie to jot down the contents of a burned CD or DVD is ghetto, no matter how attractive your handwriting might be. We're equally tired of ruining perfectly good discs with misaligned adhesive labels.

So imagine our delight when we found out about HP's new LightScribe technology, which will enable us to burn both text and pictures right on top of our discs.

You'll need both a LightScribe-enabled CD or DVD burner and LightScribe media, because the process won't work on standard CD-R/RW and DVD-R/RW discs. Once you've burned your data onto the disc, simply take it out of the drive, flip it over, and re-insert it into the drive to burn the label. HP says media-burning software developers are in the process of updating their products to add LightScribe functionality, so you should check with the manufacturer of your app of choice before throwing down your cash for a LightScribe-capable drive. The technology is currently limited to printing gray-scale images and text, with lettering printed in either straight-line or radial fashion around the disc. LightScribe media will be available in both CD-R/RW as well as 8x DVD+R/RW formats. Go to **www.lightscribe.com** for more details.



While LightScribe can only print gray-scale text and images, its capable of an impressive level of detail.

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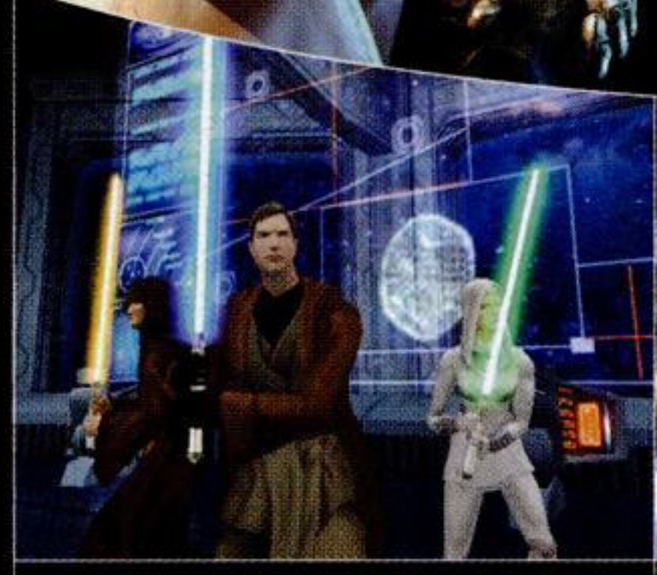
STAR WARS KNIGHTS OF THE OLD REPUBLIC II

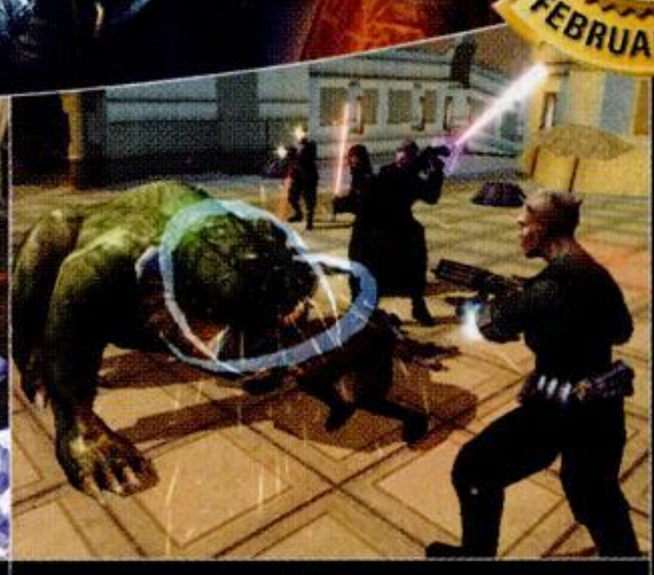
THE SITH LORDS

ONE WILL MAKE THE CHOICE. ALL WILL MAKE THE JOURNEY.
TOGETHER YOU WILL FACE THE OUTCOME.
AVAILABLE ON PC
The Sequel to the 2003
GAME of the YEAR
FEBRUARY 2005



Your companions will follow you to the dark or light side of the Force based on your choices.

Wield over 60 new feats and Force powers as you and your party struggle to defeat the evil Sith.



Travel among 7 worlds and explore new environments on your mission to save the galaxy.

THIS TIME, YOUR CHOICES AFFECT EVERYONE AROUND YOU.

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TEEN T CONTENT RATED BY ESRB
Blood
Violence

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GAME THEORY

BY THOMAS L. McDONALD

Bloody Hell

My faith is awash in blood. As a Catholic, it's at the very heart of my belief system: the ritual sacrifices by the Jews, the death of Christ, the transubstantiation of the Mass. "The blood is the life," Bela Lugosi says in *Dracula* (1931), and it's as concise an explanation as any. After all, God was pleased with the blood sacrifice of Abel, and displeased with Cain's offering of the "fruit of the soil." So, of course, Cain killed Abel. I'm sure it made sense at the time. In the words of AC/DC: "If you want blood, you got it."

The most striking thing about *The Passion of the Christ* is how much it absolutely demands a uniquely Catholic mindset to fully understand it. Among mainstream critics, only ex-altar-boy Roger Ebert "got it." Gibson dramatized a ritual called the Stations of the Cross: an annual meditation upon the physical suffering of Christ. It's inextricably woven into our faith.

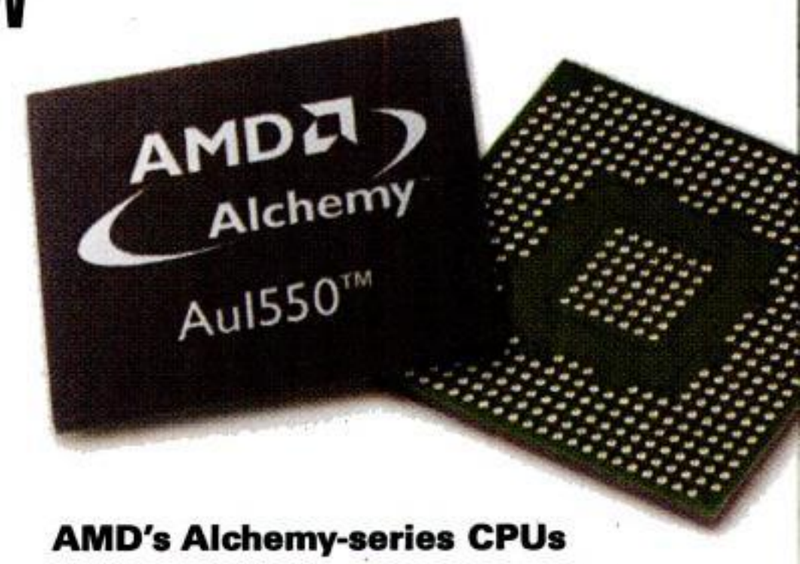
The armchair psychiatrists can decide whether or not this accounts for my lifelong enjoyment of horrifying, often violent, entertainment: fiction, films, and, naturally, games. I'm not morbidly obsessed with them, but there's a pure operatic power of violent entertainment that I have found nowhere else but in religion. It's the power to shock and to disturb, certainly, but also to purge. I not only think this is fine (for adults), but healthy; for some, it's even essential. Violence is wrapped so tightly around our very being, our nature, our faith, our concepts of self that we can never pry it apart. It speaks to us, and while we must master that aspect of the human condition, we'd be foolish to pretend it doesn't exist.

Violent images engage our basest elements. Religion draws out our most noble aspects. Together they form the two halves of our humanity, constantly at war. Frankly, I'd rather exorcise the darker impulses in the safe confines of a game than on my neighbor's skull. Obviously, that's a gross oversimplification, but I think it does strike at a core truth that all faiths share. We are called upon to master these darker impulses, not to pretend they don't exist. That's what so many crusaders against violent entertainment seem to miss: the distinction between thought and deed, fantasy and reality, sin and sinner. The human heart is the battleground for the soul of man. Isn't it better if some of those skirmishes are dispelled with harmless imaginary diversions?

Tom McDonald has been covering games for countless magazines and newspapers for 11 years. He lives in the New Jersey Pine Barrens.

AMD Unleashes New Low-Power CPUs

New processors bound for handhelds and palmtops



AMD's Alchemy-series CPUs consume less than a watt of juice.

Firing yet another shot across the bow of the good ship Intel, AMD has announced an all-new processor line designed for handheld devices and portable video players. Collectively named Alchemy, these processors have incredibly low power requirements as well as video-specific features for use in PDAs and handheld video players (the latter have yet to catch fire, but most market analysts view them as a potentially huge future market).

Alchemy CPUs have already been named the CPU of choice for Tivo's new Tivo-To-Go technology, which will allow people to transfer recorded content from their Tivo onto a laptop, PC, or handheld video player for viewing on the road or at the gym.

The processors consume so little energy they don't even require a heatsink, with the Alchemy AU 1550 consuming just 0.5 watts at 400MHz and the AU 1100 sipping 0.25 watts at the same clock speed. For video duties, the Alchemy CPUs are powerful enough to run Divx, WMV9, and MPEG. They can also rescale video on the fly, so there's no need to transcode content when shuttling it between devices.

BitTorrent's Successor on the Way

New app will be searchable, decentralized

It seems that every time the feds, the RIAA, or the MPAA succeeds in shutting down a P2P file-sharing service or web site, another one immediately pops up to take its place. We'll soon witness this phenomenon once again with the arrival of the all-new P2P file-sharing application *Exeem*.

Exeem—which is based on BitTorrent technology—comes close on the heels of a massive legal barrage that shuttered numerous popular web sites that showed people where to download "torrent files," which typically included Hollywood movies, copyrighted music, TV shows, and other illegally copied content. The biggest of these sites, Suprnova.org, was shut down in late December, and its staff is responsible for the development of *Exeem*, which should debut soon.

While BitTorrent is a very efficient application for sharing data among many users, its Achilles' heel has always been that users must go to a centralized, public web site to find downloadable content. *Exeem* solves this dilemma by decentralizing the whole operation, so there are no public web sites to visit or servers to shut down. Unlike most BitTorrent clients, however, *Exeem* will be searchable and users will also be able to add comments to files they've uploaded or downloaded. The only fly in the ointment is that *Exeem* will be ad-based, though an *Exeem* spokesman has stated that users will be able to opt out of some—not all—of the ads displayed within the application.

Bit Torrent is about to go even deeper underground in an effort to avoid future litigation.

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THE LG FLATRON IS FLAT-OUT THIN.

WALL MOUNTED (front view)

SLIM SCREEN

INTEGRATED PORTS

90° TILT (auto image flip)

PORTRAIT

INTRODUCING THE NEW 80 SERIES LCD FLATRON™ MONITOR FROM LG; the slimmest flatscreen in its class. Its *f*·ENGINE™ technology features the first LCD picture-enhancing chip to provide not only astounding color, but superb contrast and image quality. To see all the LG LCD monitors in sizes ranging from 15"–30," visit LGusa.com.

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f·ENGINE

L1980U model shown

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TechnoFile

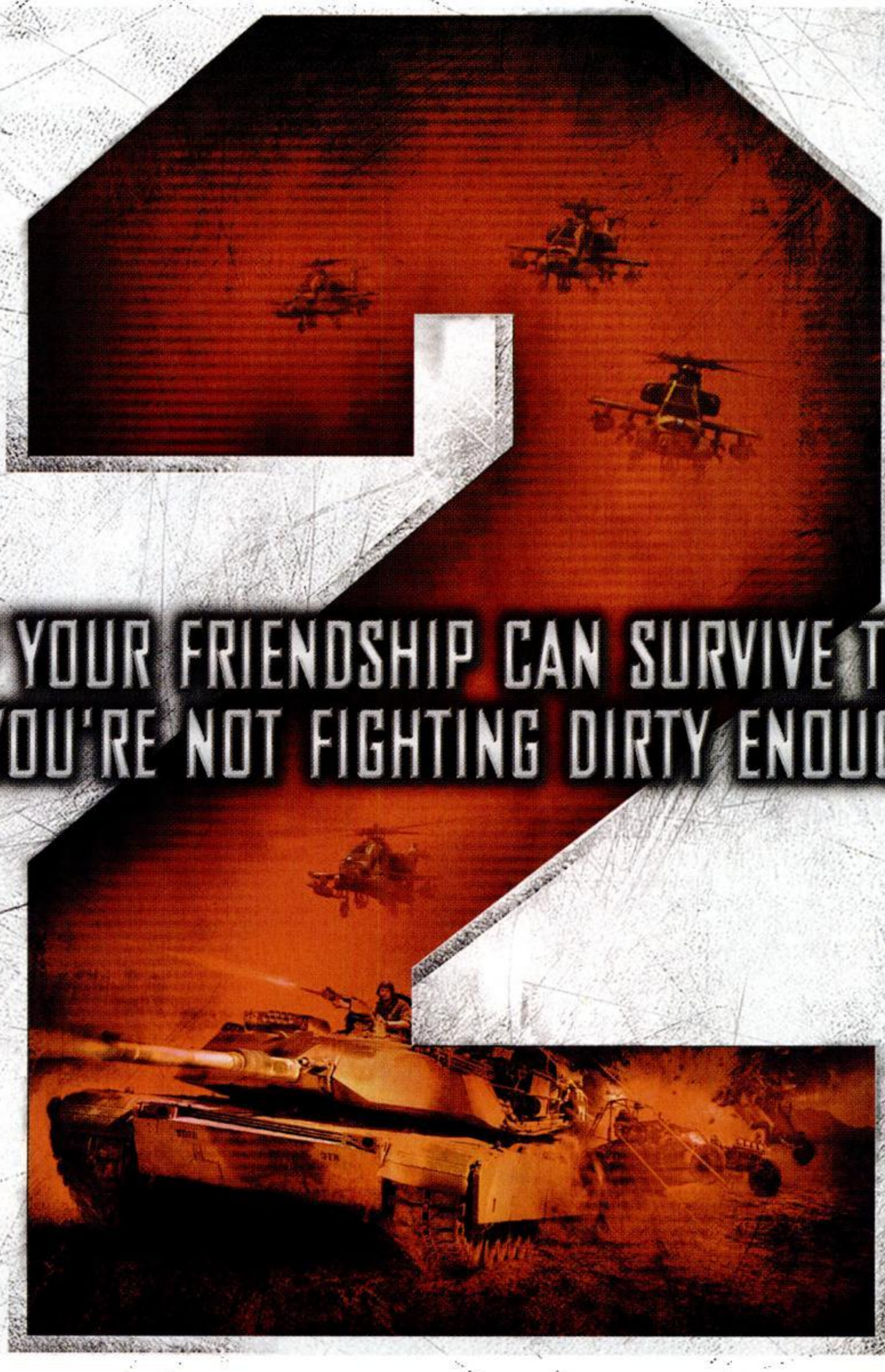
Quick takes on technology trends

Kodak EasyShare-One

Only the most uber of the uberest digital SLR cameras let you send your photos to a PC over a Wi-Fi network, which is why Kodak's new Wi-Fi enabled EasyShare-One is so bitchin'. After the photo shoot ends, just drop the optional SDIO Wi-Fi card into the SD expansion port, step into the nearest hotspot, and send the pics to your PC or to an online photo gallery. You can even browse your online gallery directly on the camera's enormous 3-inch LCD display. The icing on the proverbial cake is that the LCD swings out to allow easy self portraits, and it rotates 180 degrees so you can flip it over to protect the LCD when the camera isn't being used.

Though the EasyShare's resolution is only four megapixels, it sports a fat 256 megabytes of internal memory and lets you create photo albums for viewing on the camera's LCD. You can edit your online gallery directly from the camera and do lots more, including shooting video. We could go on and on, but you get the point.

$600, www.kodak.com



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GET PROMOTIONS AT THE EXPENSE OF COWORKERS.

A NEW GAME ENGINE MEANS YOU EITHER LEARN TO TELL COVER FROM CONCEALMENT, OR YOU WON'T LIVE TO RACK UP VICTORIES AND RISE UP THE RANKS. COORDINATE ATTACKS VIA VOICE OVER IP AND PROVE YOU'RE A LEADER IN NEW COMMANDER MODE.

NO AGENDAS. JUST AGGRESSION.

THESE NEW HOSTILITIES AREN'T ABOUT PRINCIPLES OR POLITICS. IT'S PERSONAL. YOU AGAINST FRIENDS, COWORKERS OR ANYONE ONLINE WHO WANTS TO START SOMETHING NOISY.

GOLIATH OR GUERRILLA: WHAT'S YOUR FIGHTING STYLE?

GEAR UP AS THE U.S., CHINA OR THE MIDDLE-EAST COALITION. THEN DECLARE 16, 32 OR 64-FIGHTER FREE-FOR-ALLS OVER MAPS OF CHINA OR THE MIDDLE EAST THAT SCALE TO THE SIZE OF THE MELEE.

RATING PENDING
RP
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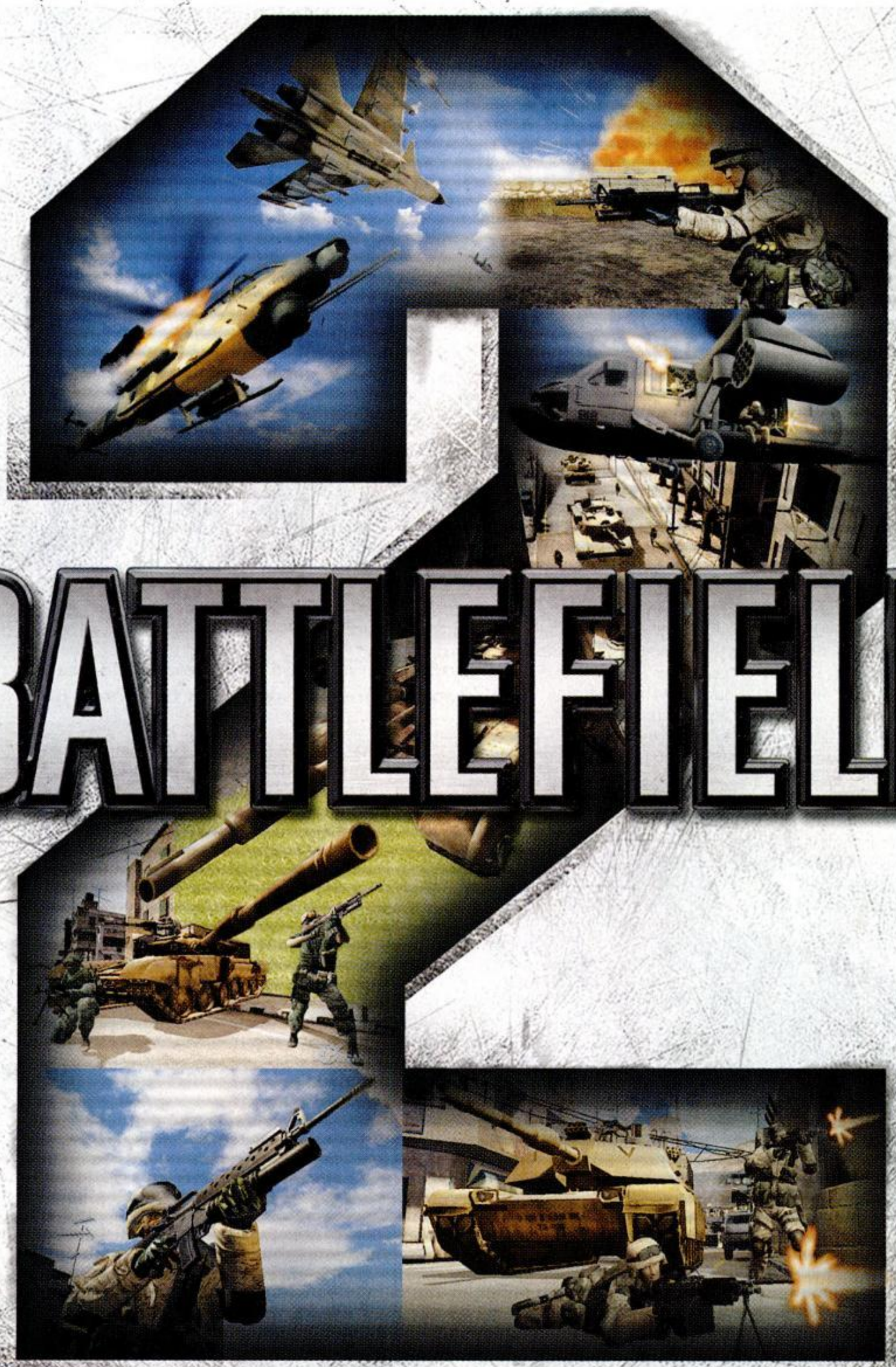

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The way it's meant to be played NVIDIA

PLAYS BEST ON ALIENWARE

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Head2Head

A showdown among natural PC competitors

THIS MONTH: SLR vs. Point-and-Shoot

The SLR has been king of small-format photography for decades. In the digital age, however, people wonder whether it's still worth paying a premium for an SLR body rather than opting for an advanced point-and-shoot. To answer this question, we compare the $900 Olympus C-8080 point-and-shoot with the $1500 Canon EOS 20D SLR—each represents the top of its respective category. So what do you get when you chose one body over the other, and what do you sacrifice? Read on for the results.

—GORDON MAH UNG

SLR: CANON EOS 20D

In good light, you'd be hard pressed to see the differences between the images shot with these two 8MP cameras.

Viewfinder: With all SLRs, you see your subject directly through the lens via a set of mirrors and prisms. Although the Canon's 20D doesn't have the best viewfinder in its class, it's superior to any electronic viewfinder (EVF) we've seen to date. Still, EVFs have their advantages. For one thing, there's no mirror that must move out of the way before the picture is snapped, which means there's no camera shake or noise. That said, we maintain that an optical viewfinder's higher resolution trumps the convenience and advanced features offered by an electronic viewfinder—at least for now. **Winner: SLR**

Formfactor: Camera manufacturers tell us that consumers who prefer SLRs say there's one thing they *don't* like about this type of camera: the bulk. The EOS 20D is smaller than its predecessor, but it will never be as small as even the largest advanced point-and-shoot: **Winner: Point-and-shoot**

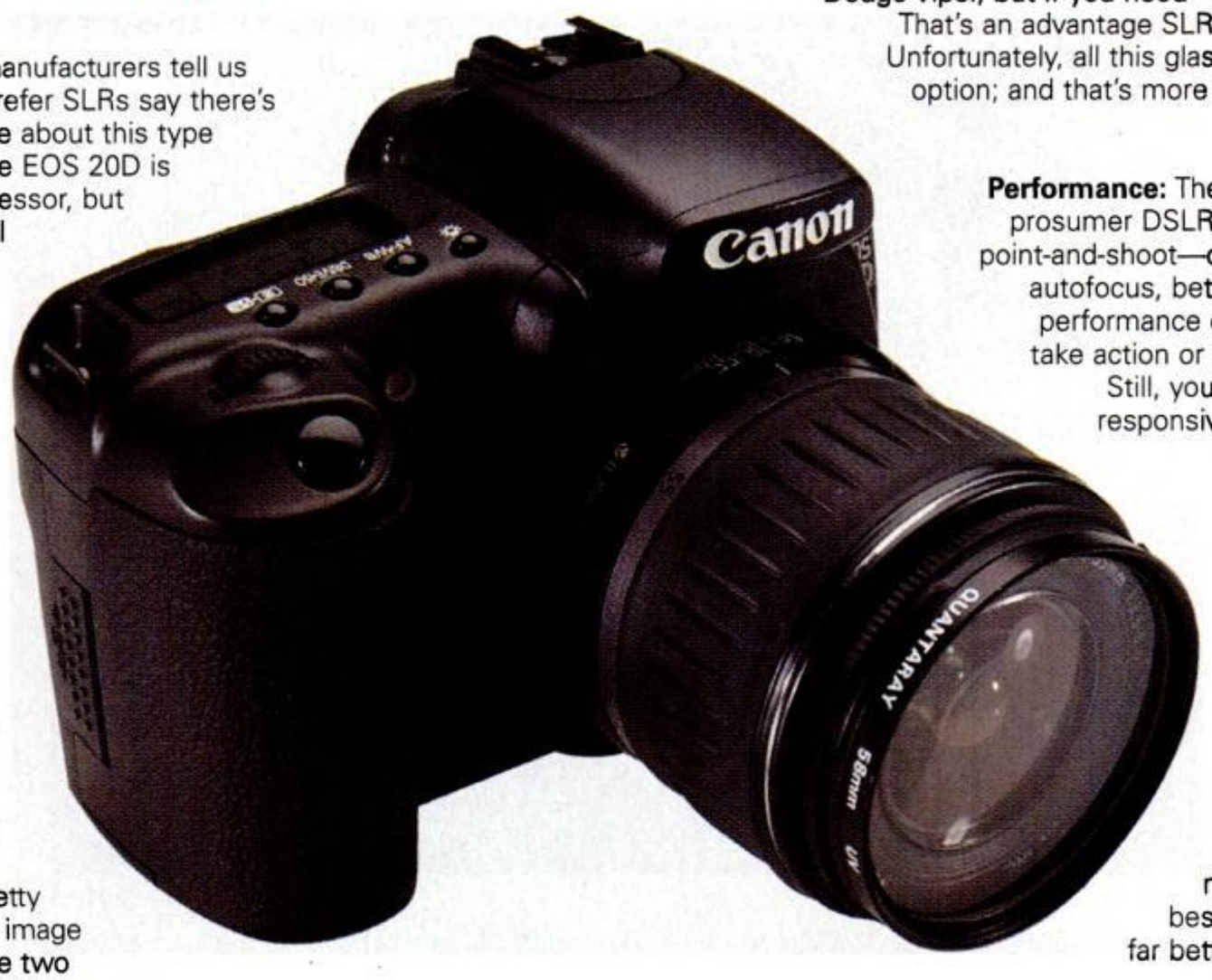

Image quality: The EOS 20D produces what people like to call "butter-smooth" images, thanks to its advanced 8.2MP CMOS sensor. Which camera is better, though, really depends on your shooting style. If you tend to take pictures in well-lit environments, you'll actually have a pretty difficult time discerning image differences between the two bodies. If you tend to take existing-light photographs, such as of a jazz combo in a smoky bar, the SLR rules the roost. And this isn't about CMOS vs. CCD; it's really about size. Image noise tends to increase as you pack more pixels into an image sensor. Because digital SLRs tend to be outfitted with much larger sensors than point-and-shoots, they generally produce images that are less "grainy" at high ISO settings. The EOS 20D, for example, produces useable images at 1,600 ISO, while the C-8080's range tops out at 400 ISO. We give it to the SLR in this category, but must reiterate that the 8MP Olympus does remarkably well in good lighting. **Winner: SLR**

Lens: Canon's lens lineup runs from 10mm all the way to 1,200mm. Of course, the 1,200mm lens weighs 40 pounds and costs more than a Dodge Viper, but if you need—and can afford—such a beast, it's available. That's an advantage SLRs have had over point-and-shoots for years. Unfortunately, all this glass costs cold, hard cash—but at least it's an option; and that's more than can be said of an advanced point-and-shoot. **Winner: SLR**

Performance: The EOS 20D is at the top of the heap among prosumer DSLRs. As good a picture as the C-8080—or any point-and-shoot—can take, none can compare with the faster autofocus, better ability to track moving objects, and 5fps performance of the 20D. On the other hand, if you never take action or sports photos, the EOS 20D is just overkill. Still, you'd probably never complain about the AF or responsiveness of the 20D; the advanced point-and-shoots still have some growing to do. **Winner: SLR**

Movie mode: Many people are disappointed to discover that a lowly $150 point-and-shoot camera can do something their brand-new $1,500 DSLR wonder can't: shoot movies. That's because the mirror that's used to look down the lens and the physical shutter wall off the sensor from incoming light. It's simply impossible to use a digital SLR as an ad hoc video camera. While the movie quality on point-and-shoots is not the best, there are times when a motion picture is far better than any still. **Winner: Point-and-shoot**

Dust: The ability to remove the lens is both a boon and a bane to photography in the digital age, because that large image sensor we boasted of earlier also acts like a dust magnet. When you swap lenses or use lenses that suck in dust, you're going to end up with a dirty sensor. It'll take a year or two before the dust becomes annoying, but it's a problem that's unique to digital SLR bodies. To date, Olympus is the only manufacturer to have implemented any kind of technology—in its E-1 and Evolt-series cameras—to combat the dust problem. **Winner: Point-and-shoot**

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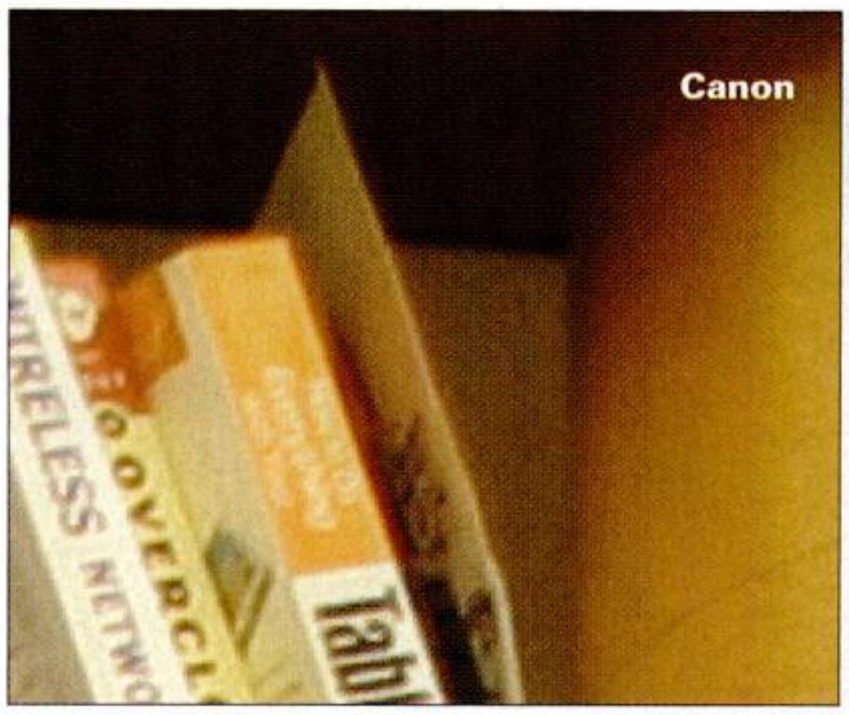
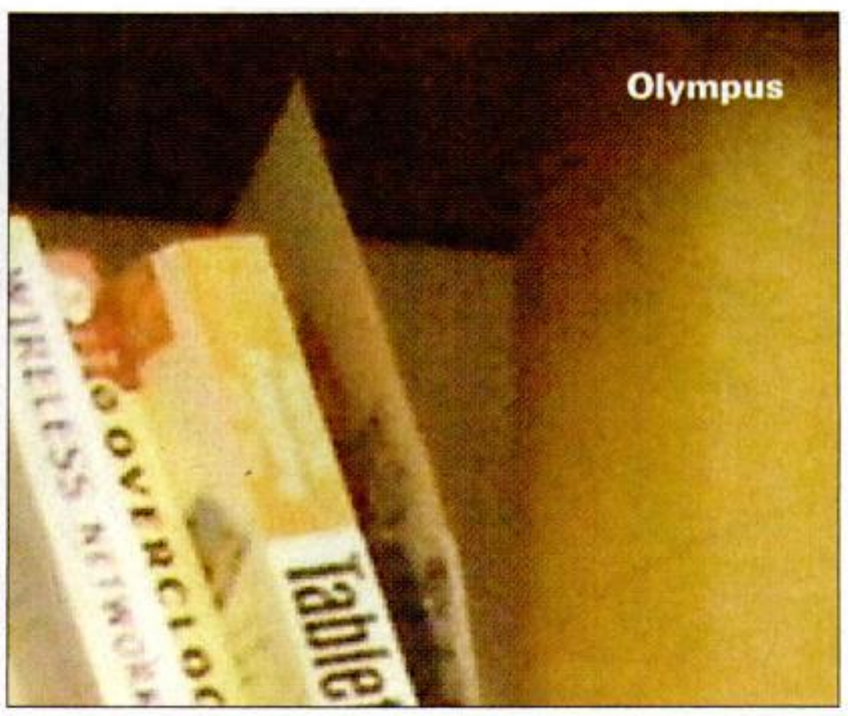
POINT AND SHOOT: OLYMPUS C-8080





Most point and shoots like the C-8080's major weakness is taking images at high ISO ratings. At 400 ISO, the C-8080 grain is very visible while the 20D's is still almost grainless.

Viewfinder: Most point-and-shoot cameras with optical range-finders use a tiny window offset from the lens to help you frame the subject. Unfortunately, these little windows are only approximations of what the lens is seeing, so they're directly responsible for the beheading of thousands of people every year (in pictures, at least). The Olympus C-8080 gives you the best of both worlds with its eye-level electronic viewfinder. The image can't get washed out in bright light, and what you see is what you get.

The EVF in the C-8080 also has an advantage over the SLR: It presents more data. Most SLR data is either at the bottom of the viewfinder or on the right side. Because an EVF is a tiny LCD screen, the camera can superimpose, HUD style, such useful info as a real-time histogram or other camera settings on the scene. Neato. Furthermore, all point-and-shoots let you frame your image from the preview LCD on the back. With the C-8080, you can angle it out from the body, so you can frame a Hail Mary shot or get a worm's-eye view of your subject. Still, we'll take the power-conserving high resolution of an SLR over the advantages of the point-and-shoot. **Winner: SLR**

Formfactor: There's really no contest here. Even though there's a macho factor to lugging around a five-pound camera and lens, we'd rather take the point-and-shoot on a long hike any day of the week. **Winner: Point-and-shoot**

Image quality: There's a reason why the Olympus C-8080 has such a great rep: It takes such remarkably good pictures that you'd be hard pressed to see a difference between its output and that of any prosumer or consumer digital SLR. That's assuming, however, the C-8080 has a decent amount of available light to shoot in. There's a simple problem that technology has yet to overcome: image noise—aka grain—increases in proportion to the number of pixels in the image sensor. The only way to reduce the grain is to spread the pixels over a larger area. The C-8080's 58mm^2 image sensor simply can't compete with the EOS 20D's 337mm^2 sensor, which spreads its pixels over an area that's nearly six times larger. **Winner: SLR**

Lens: The stock 18-55mm lens on the EOS 20D is roughly equivalent to a 29-88mm lens on a 35mm film camera. The C-8080 comes with a much wider 7-35mm (28-140mm, 35mm equivalent) lens. Unlike the C-8080, however, the SLR can easily be refitted with lenses both longer and wider than anything you can get for an advanced point-and-shoot. **Winner: SLR**

Performance: The C-8080 can capture a continuous burst of shots at 1.6fps. That's pretty good for a point-and-shoot. The Canon, on the other hand, can shoot up to 23 frames at 5fps; and with a fast ultrasonic-motor lens, it can out-track any point-and-shoot on the planet. Besides the interchangeable lenses, performance is the number-one reason to forsake a point-and-shoot for an SLR—even if it does carry a heftier price tag. **Winner: SLR**

Movie mode: If a picture is worth 1,000 words, then a video with sound is worth 10,000. That doesn't mean you'll ever trade your DV camcorder for the 640x480 QuickTime movies the C-8080 produces, but at least it's an option. And it's an option you will never have with an SLR. **Winner: Point-and-shoot**

Dust: Because a point-and-shoot is a sealed box, there's no easy way to introduce debris onto the image sensor. The same can't be said of a SLR, which requires you to clean it once in a while, using swabs or blowers that can wreck the sensor if used improperly. Once you've damaged the delicate sensor, you can kiss your $1,500 goodbye. **Winner: Point-and-shoot**

THE UPSHOT

Whether moving up to a digital SLR is worth the extra cost really depends on how serious you are about photography. If you shoot nothing more than group photos or subjects that don't require the performance, speed, and lens options of an SLR, it doesn't make sense to deal with the extra weight, cost, and complexity of an SLR. On the other hand, if you plan to get serious about photography, shoot in a lot of low-light environments, and use subjects that don't remain stationary, there's no point-and-shoot camera on the market that can beat a digital SLR. ■

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WatchDog

Say hello to Opal, WatchDog of the Month

Maximum PC takes a bite out of bad gear

THIS MONTH: The WatchDog goes after...

>Abit >AMD >Free iPod >EverythingComputing.com >Apple

Recapping the Caps

It looks like the Dog was a little premature when he announced the URL for Abit's pending settlement over blown capacitors on its motherboards. The URL www.abitsettlement.com is correct, but the web site wasn't yet online last month. It's expected to be up by the time you read this column. If you missed last month's column, motherboard manufacturer Abit has tentatively agreed to settle a lawsuit alleging its motherboards used faulty capacitors. The settlement applies to the following Abit boards: BE6, BE6II, BF6, BX-133, KA7, KA7-100, SE6, VH6, VH6II, VH6T, VP6, KT7-RAID, KT7A, KT7A-raid, VL6, VT6X4, SA6R, and BX133-RAID, purchased between 1999 and now. Owners of these boards will be eligible for an extended warranty and repairs resulting from failed capacitors. Folks who had their boards repaired prior to the settlement may be eligible for a reimbursement. For more information visit www.abitsettlement.com. For real, this time… hopefully.

AMD Remarking

A bust in Asia should remind consumers to exercise a modicum of caution when buying CPUs. Taiwan police reportedly seized some 60,000 Athlon XP and Athlon 64 CPUs that had been "remarked," or counterfeited. In this case, the scallywags somehow got their mitts on CPUs earmarked as defective and were remarking them for higher speeds and thus higher profits, according to the news site DigiTimes.com. The CPUs might have been stolen from an AMD plant, but that hasn't been confirmed. As many as 1 million remarked CPUs could have been shipped to Germany and China, according to news reports. None of these chips are known to be bound for American soil, but it's nonetheless wise to take precautions whenever you purchase a processor. Here are a few simple tips to keep in mind:

- Buy a retail-boxed processor if possible. Most of the remarking targets OEM, or tray, processors that come without the packaging. Although this isn't a 100-percent guarantee, it'll greatly lower your risk and give you AMD's three-year warranty to boot.
- Before installing your new CPU, carefully examine it to see if it has been tampered with. Put the chip under a good magnifying glass and good light to see if the bridges have been altered (on an Athlon XP), and look for any other visible signs on the chip that don't seem "factory."
- Buy from an authorized AMD or Intel distributor or reseller. Or at least buy from a store or web site you've done business with in the past and trust. The best stores will have a liberal return policy that doesn't punish end users with restocking fees if there's a problem with the product.

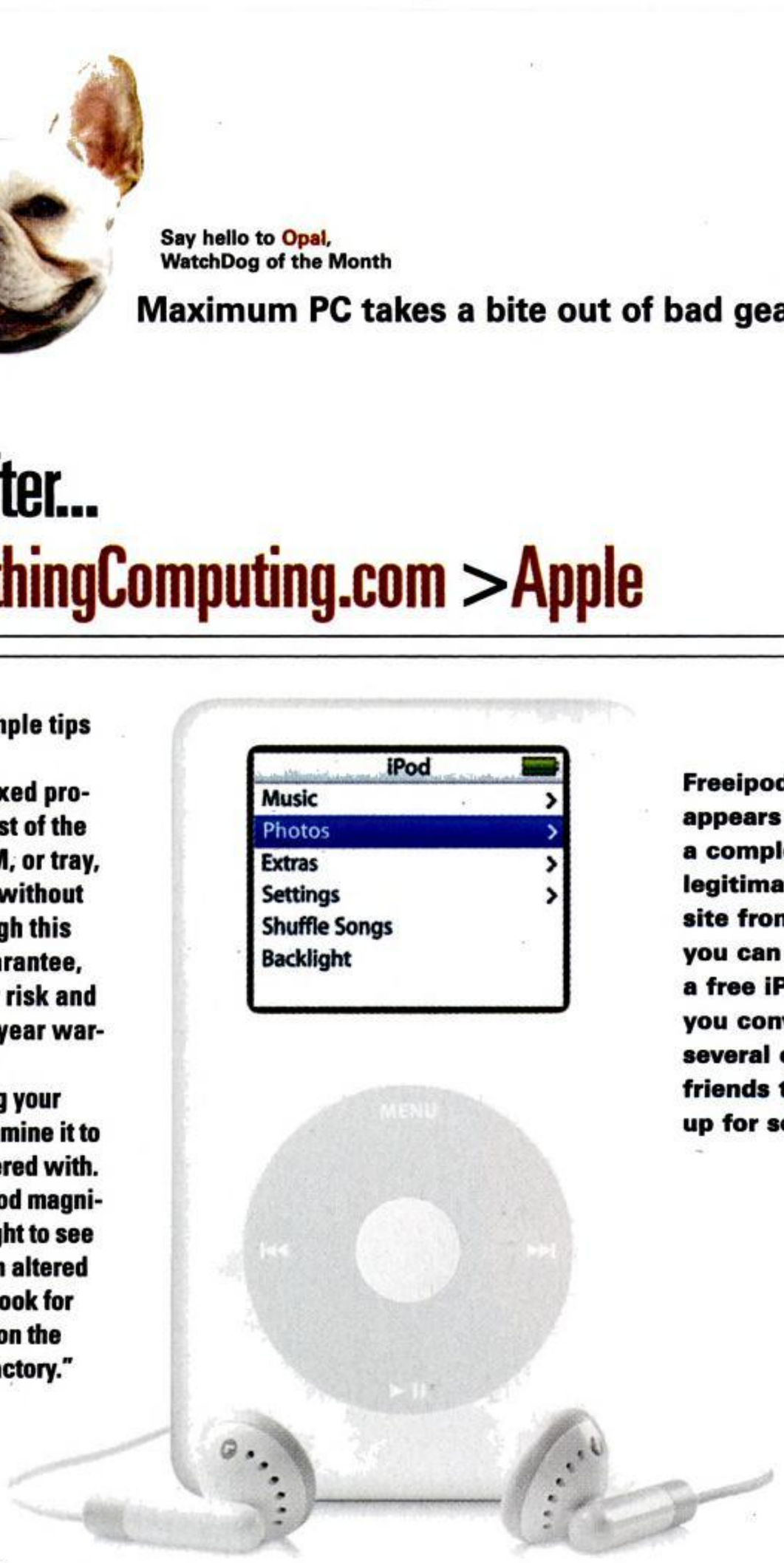
"IF IT'S TOO GOOD TO BE TRUE, THEN IT PROBABLY IS. EXCEPT THIS TIME."

Too Good to Be True, Not

DEAR DOG: I've been seeing lots of "get free" ads on the net lately, such as the ones looking for "product testers." While I'm very confident these can't all be true, the free iPod announcement at www.freeipods.com, seems rather convincing.

I have no idea how it can possibly work when you don't even need to pay to get it, but I've heard friends say they've done it and they only need to refer X more people until they get their free product. Plus, I've seen these ads on respectable sites. I was wondering if the Dog could look into both of these—the product testers and the free iPods—and see what the deal is and if they're legitimate.

— AARON GINGRICH



Freeipods.com appears to be a completely legitimate web site from which you can get a free iPod if you convince several of your friends to sign up for services.

THE DOG RESPONDS: If it's too good to be true, then it probably is. Except this time. While the Dog thinks consumers' Spidey sense should always kick in when someone offers "free" products, Freeipods.com is a completely legitimate operation. The site is run by Gratis Internet, which employs the same business model as the people who hawk towels, t-shirts, and mugs at football games. You know the offer: Apply for a credit card and get a free towel with your team's logo on it. Only, instead of a towel, you get an iPod.

Freeipods.com asks you to sign up for one of several available services or products, such as a one-month trial of Blockbuster rentals, a subscription to *USA Today*, or one of several credit-card offers or online music services. Some of the services are free, but others aren't. In the case of Blockbuster, you must sign up for one month at $9.95, with subsequent months costing $14.99. Blockbuster, of course, hopes you'll like its service enough to continue to using it beyond the first month.

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Small Businesses helped make
This month we invite all SMBs

Inside every small business there's a website waiting to get out

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I Home I Local Listings I New Construction I Agents I Mortgage Calculator I

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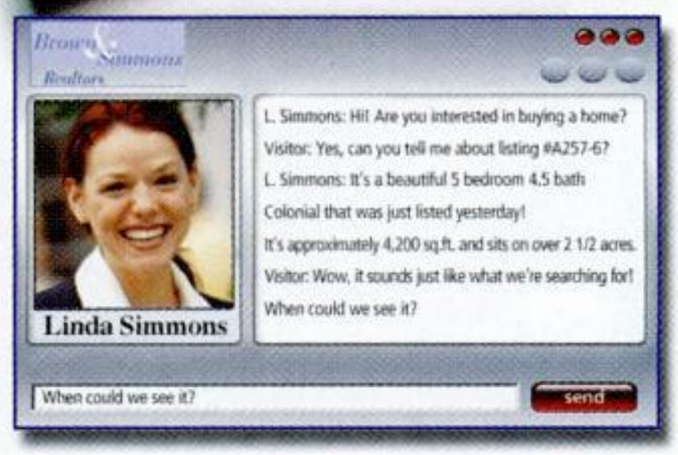
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L. Simmons: Hi! Are you interested in buying a home?
Visitor: Yes, can you tell me about listing #A257-6?
L. Simmons: It's a beautiful 5 bedroom 4.5 bath Colonial that was just listed yesterday!
It's approximately 4,200 sq.ft. and sits on over 2 1/2 acres.
Visitor: Wow, it sounds just like what we're searching for!
When could we see it?
Linda Simmons
When could we see it?
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Karen Anderson
Phone Number
877-461-2631
E-Mail
karen@karenanderson.us
Home Criteria
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Send

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Brown & Simmons Realtors
newsletter no.23
Dear Jim,
Welcome to the Monthly Update from Brown & Simmons, Realtors. This month, we have some really special properties to show you. You can call the office at any time to find out more details on these listings.
4 bedrooms, 3 1/2 bath Stunner!
Built in 1997, this single family home is located in a charming neighborhood and sits on 1 acre of land. With approximately 4,200 square feet of living space, the home features a large deck from the kitchen, large eat-in kitchen, family room, formal living room, 2 fireplaces, hardwood floors throughout, skylights, soaking tub in the master bathroom, and loads more! This home is a must see!

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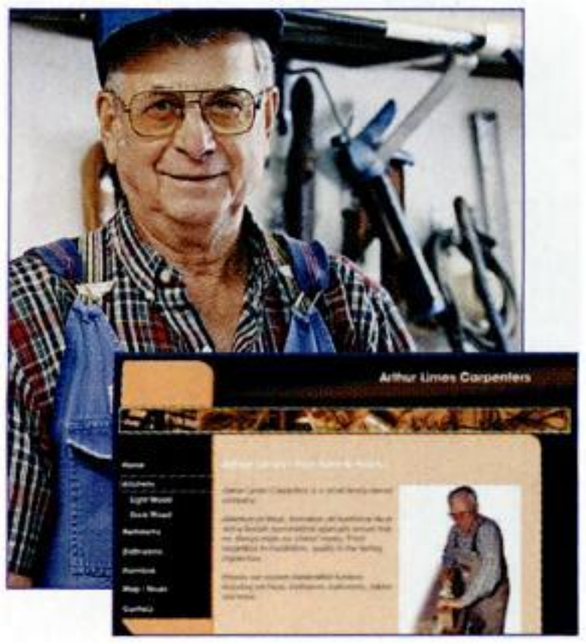
Bruce Zachary, Engineer

It works!

"1&1 includes these great marketing tools that help me better communicate with my customers. I can see when someone comes to my site and converse with them right then and there! I can easily collect and manage my customers' data, and I can send e-mail newsletters announcing special offers."

Kelly Sloan, Salon Owner



It's free!

"When I heard about 1&1's previous test drive promotion, I decided to give web hosting a try. Turned out, a website was exactly what my business needed. I am able to showcase my work and attract new customers. Being able to test drive the package convinced me to stay with 1&1."

Arthur Limes, Carpenter

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2005

January 1 – February 28, 2005

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- ✓ No Strings Attached!
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Now – for a limited time – you can get online with 1&1 with a no obligation, 6-month test drive of the 1&1 BusinessPro Package – 1&1's most popular hosting plan! Join the millions of small businesses who have already established a successful online presence with 1&1. Your free trial is just a click away. But hurry, this offer ends February 28, 2005!

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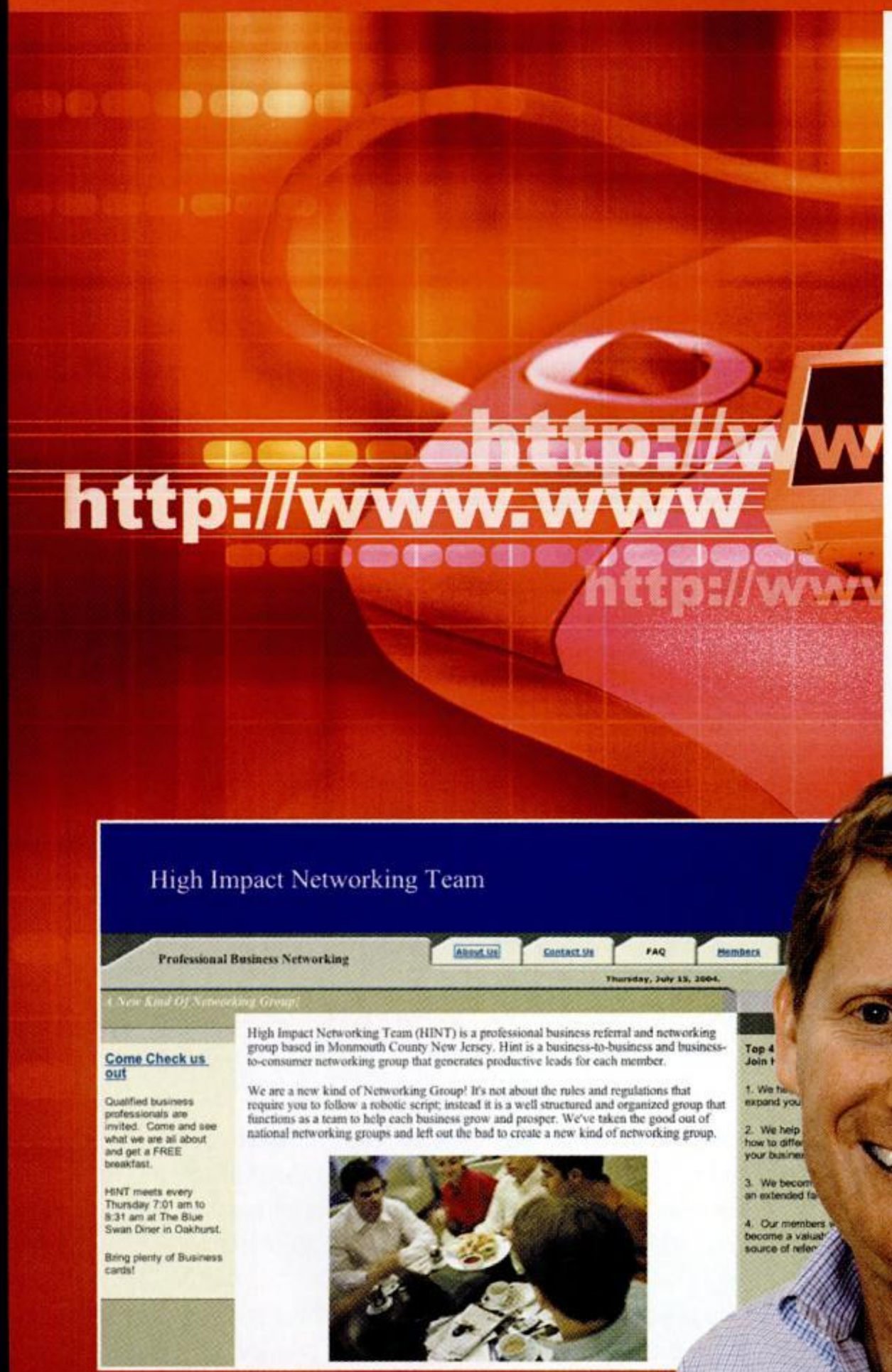

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We are a new kind of Networking Group! It's not about the rules and regulations that require you to follow a robotic script; instead it is a well structured and organized group that functions as a team to help each business grow and prosper. We've taken the good out of national networking groups and left out the bad to create a new kind of networking group.

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George Alto
www.HighImpactNetworking.com

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Monthly transfer volume	25 GB	25 GB
FTP accounts	1	1
1&1 Control Panel	✓	✓
Logfiles	✓	✓
MARKETING TOOLS		
Chat channels	1	1
1&1 WebStatistics	✓	✓
SITE-BUILDING TOOLS		
PDF2Web Converter	✓	✓
DynamicSiteCreator	✓	✓
Graphic archive	✓	✓
WebsiteCreator	12 pages	12 pages
Software suite worth $600	✓	✓
$50 Website Pros voucher	✓	✓
FrontPage extensions	✓	✓
CGI library	✓	✓
Active Server Pages	–	✓
DOMAIN NAMES		
Included Domains	1	1
Subdomains	10	10
Run multiple independent sites	✓	✓
Full DNS management	✓	✓
E-MAIL		
E-mail accounts w/ 1 GB space each	200	200
Aliases, auto-responders, forwarding	✓	✓
1&1 WebMail	✓	✓
Spam filtering for all accounts	✓	✓
Virus protection for all accounts	✓	✓
SECURITY FEATURES		
Protected by up-to-date firewall	✓	✓
Daily backups	✓	✓
Password protected directories	✓	✓
Dedicated SSL Certificate	optional	optional
SUPPORT		
24/7 phone support	✓	✓
24/7 e-mail support	✓	✓

BUSINESS PACKAGE

$9.99 PER MONTH

INCLUDES 3 DOMAINS

PACKAGE FEATURES	Linux	Windows
Web space	2,000 MB	2,000 MB
Monthly transfer volume	50 GB	50 GB
FTP accounts	5	5
1&1 Control Panel	✓	✓
Logfiles	✓	✓
MARKETING TOOLS		
Chat channels	5	5
1&1 WebStatistics	✓	✓
In2site Live Dialogue	✓	✓
1&1 Newsletter Tool	✓	✓
1&1 WebElements	✓	✓
SITE-BUILDING TOOLS		
PDF2Web Converter	✓	✓
DynamicSiteCreator	✓	✓
Graphic archive	✓	✓
WebsiteCreator	18 pages	18 pages
Software suite worth $600	✓	✓
$100 Website Pros voucher	✓	✓
FrontPage extensions	✓	✓
CGI library	✓	✓
Active Server Pages	–	✓
ASP.NET, .NET Framework	–	✓
Perl, PHP3, PHP4, and PHP5	✓	–
1&1 WebDatabase	✓	✓
Database	1 MySQL	MS Access
Cron Jobs	✓	–
SSI (Server side includes)	✓	✓
DOMAIN NAMES		
Included Domains	3	3
Subdomains	50	50
Run multiple independent sites	✓	✓
Full DNS management	✓	✓
E-MAIL		
E-mail accounts w/ 1 GB space each	500	500
Aliases, auto-responders, forwarding	✓	✓
1&1 WebMail	✓	✓
Spam filtering for all accounts	✓	✓
Virus protection for all accounts	✓	✓
SECURITY FEATURES		
Protected by up-to-date firewall	✓	✓
Daily backups	✓	✓
Password protected directories	✓	✓
SSH Secure Shell Access	✓	–
Dedicated SSL Certificate	optional	optional
SUPPORT		
24/7 phone support	✓	✓
24/7 e-mail support	✓	✓

DEVELOPER PACKAGE

$19.99 PER MONTH

INCLUDES 5 DOMAINS

PACKAGE FEATURES	Linux	Windows
Web space	4,000 MB	4,000 MB
Monthly transfer volume	100 GB	100 GB
FTP accounts	25	25
1&1 Control Panel	✓	✓
Logfiles	✓	✓
MARKETING TOOLS		
Chat channels	10	10
1&1 WebStatistics	✓	✓
In2site Live Dialogue	✓	✓
1&1 Newsletter Tool	✓	✓
1&1 WebElements	✓	✓
SITE-BUILDING TOOLS		
PDF2Web Converter	✓	✓
DynamicSiteCreator	✓	✓
Graphic archive	✓	✓
WebsiteCreator	25 pages	25 pages
Software suite worth $600	✓	✓
$100 Website Pros voucher	✓	✓
FrontPage extensions	✓	✓
CGI library	✓	✓
Active Server Pages	–	✓
ASP.NET, .NET Framework	–	✓
Perl, PHP3, PHP4, and PHP5	✓	–
1&1 WebDatabase	✓	✓
Database	3 MySQL	MS Access, MS SQL
Cron Jobs	✓	–
SSI (Server side includes)	✓	✓
Advanced Developer Tools	✓	–
DOMAIN NAMES		
Included Domains	5	5
Subdomains	200	200
Run multiple independent sites	✓	✓
Full DNS management	✓	✓
E-MAIL		
E-mail accounts w/ 1 GB space each	1,000	1,000
Aliases, auto-responders, forwarding	✓	✓
1&1 WebMail	✓	✓
Spam filtering for all accounts	✓	✓
Virus protection for all accounts	✓	✓
SECURITY FEATURES		
Protected by up-to-date firewall	✓	✓
Daily backups	✓	✓
Password protected directories	✓	✓
SSH Secure Shell Access	✓	–
Dedicated SSL Certificate	✓	✓
SUPPORT		
24/7 phone support	✓	✓
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Tying the Knot
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Hobbies
Contact
Interesting Links
Welcome to Tying the Knot!
When you think about planning your special day, let the professionals at Tying the Knot turn your dream wedding into a reality. Let us take care of everything! We'll help you
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Step 1: Choose your layout
Create a professional site with no programming hassles

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Let animation take your site from the ordinary into the extraordinary. With the sensational new DynamicSiteCreator from 1&1, building flash sites is simple – at last! Easily create a flash site in minutes and amaze your visitors with visual effects that add movement, intrigue and excitement.

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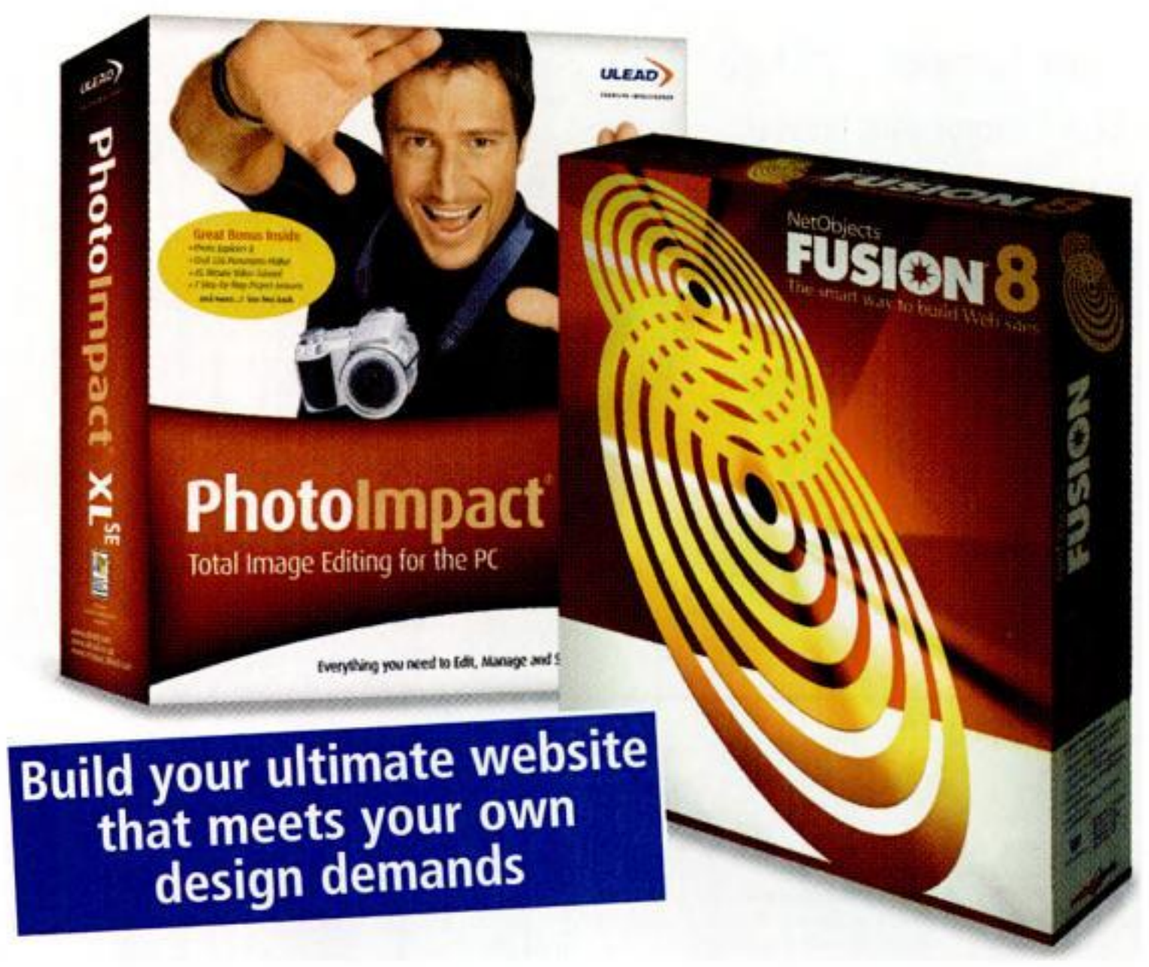
Create, publish, promote and optimize your ideal website with full versions of NetObjects Fusion 8, PhotoImpact XL SE, search engine tools and more. Plus, you'll receive the 1&1 software collection, packed with browsers, media players and other tools for maximizing your web presence. All at no additional cost!*



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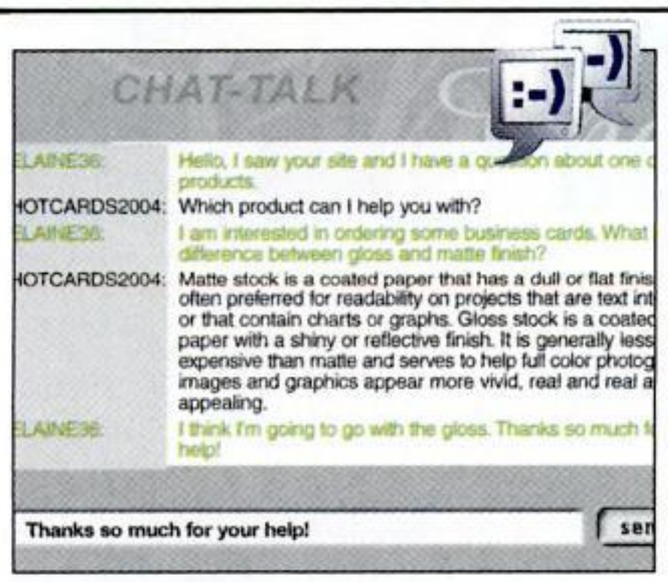
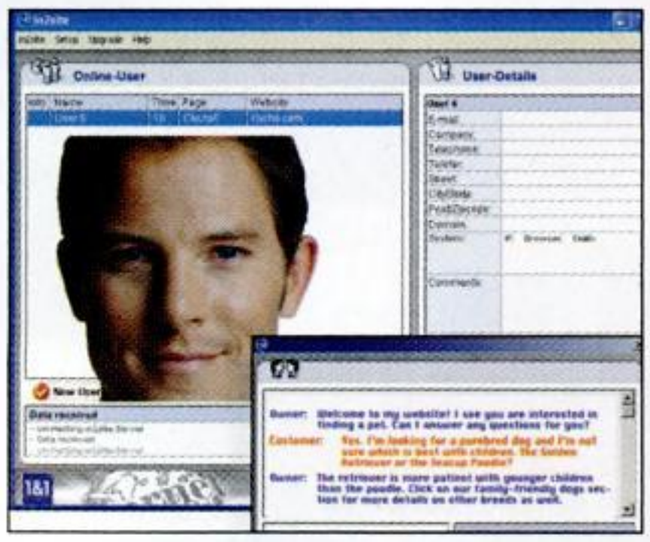
ALL WEB TOOLS INCLUDED
with Business & Developer shared hosting packages!*


CHAT-TALK
:-)
ELAINE36:
Hello, I saw your site and I have a question about one of
products.
HOTCARDS2004:
Which product can I help you with?
ELAINE36:
I am interested in ordering some business cards. What
difference between gloss and matte finish?
HOTCARDS2004:
Matte stock is a coated paper that has a dull or flat finis
often preferred for readability on projects that are text int
or that contain charts or graphs. Gloss stock is a coatec
paper with a shiny or reflective finish. It is generally less
expensive than matte and serves to help full color photog
images and graphics appear more vivid, real and real a
appealing.
ELAINE36:
I think I'm going to go with the gloss. Thanks so much f
help!
Thanks so much for your help!

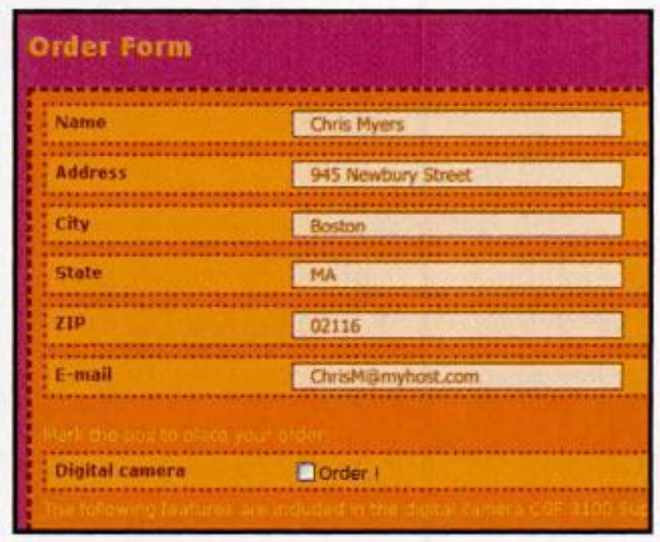
Chat Channels

Provide a meeting place for your customers and add entertainment value to your site. Unlike other chat programs, with Chat Channels your guests won't have to download any software, so they can check in from anywhere. And, your users won't be bombarded with advertisements! What you get is a place to talk to others with no added hassles.



In2site Live Dialogue

Wouldn't it be great if you could chat to your visitors while they are using your website – live and in real time? You can with In2site Live Dialogue from 1&1! In2site Live Dialogue allows for quick and easy communication with your visitors, making it an invaluable tool for sales, support and consulting professionals.



1&1 WebElements

Adding template-driven contact forms, online polls, event registrations and more to your site is a breeze with 1&1 WebElements. Adapt the templates to fit your site or be creative and easily build your own forms for any purpose! The information that your visitors enter is saved in a special Internet database, so you can view the results at any time.

*Chat Channels and 1&1 WebStatistics are included with Home packages

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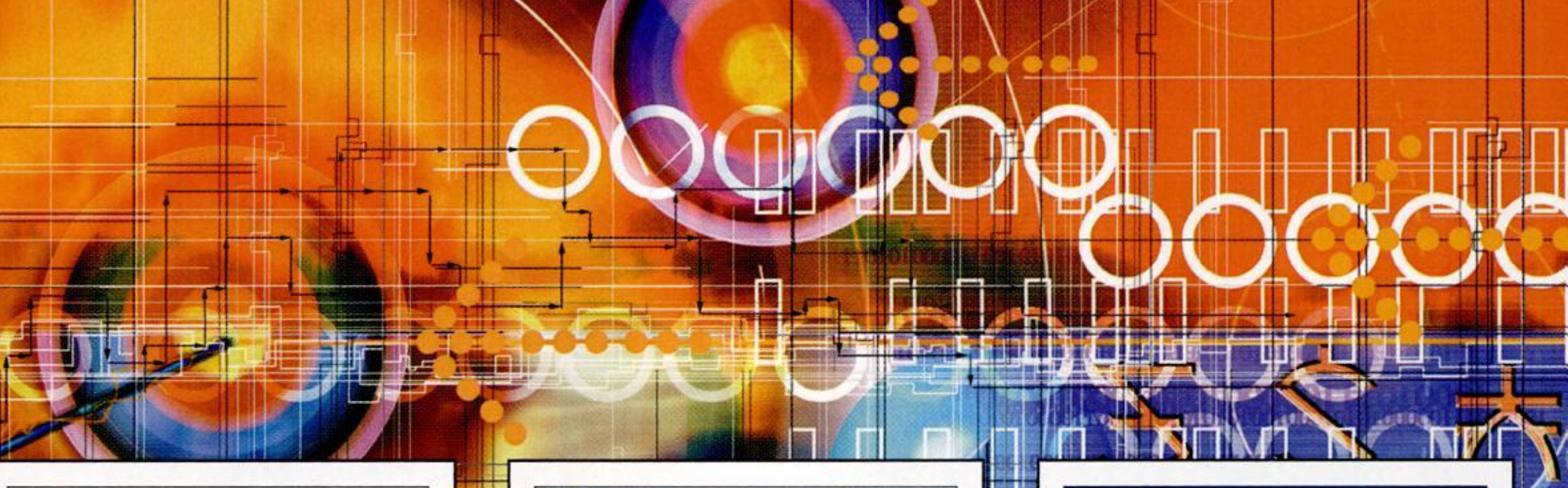
BSITE



YOUR LOGO
newsletter
Let the 1&1 Newsletter Tool help you build and maintain a relationship with your visitors via e-mail newsletters. An ideal way to keep your customers up-to-date about your newest products, exciting finds and upcoming events, e-mail newsletters keep them coming back for more!
How does it work?
To access the Newsletter Tool, simply login to your Control Panel and you're just steps away from communicating with your website visitors more easily than ever before. And since the 1&1 Newsletter Tool is browser-based and launches right from your Control Panel, there's no software to install.
When you're ready to build an e-mail newsletter, editing tools and built-in design templates let you create professional looking e-mails quickly and with no programming knowledge. Then check your completed newsletter in test mode and click send!
We even include tools to build your own mailing list! Simply incorporate a template-driven subscription form on your site so interested visitors can quickly request to receive your e-mail newsletters. Once the form is submitted, the data is automatically entered into a

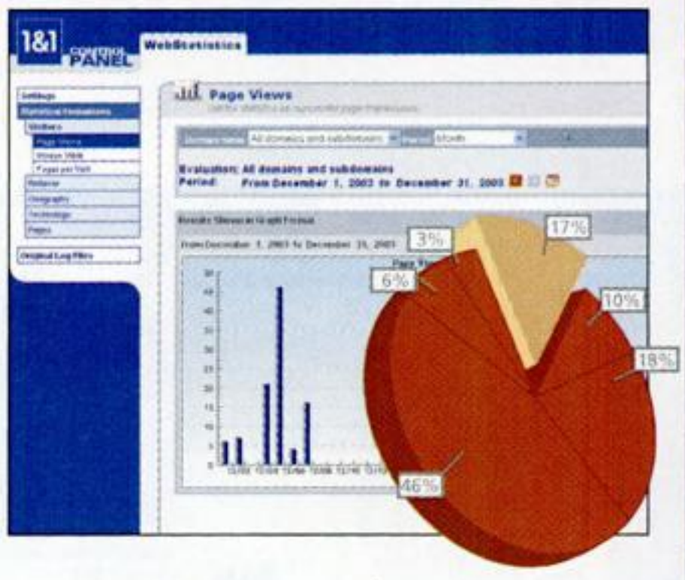
1&1 Newsletter Tool

E-mail newsletters provide an easy, cost-effective way to build and maintain relationships with your site visitors. The 1&1 Newsletter Tool lets you create and send professional-looking e-mails – with no programming hassles! You'll get everything you need to build your own mailing list, manage recipients' addresses, track results and more.

Membership List
Alan Bishop 634 E. 39th Street, New York, NY 10019 alanb@myhost.com
Stephen Bradshaw 1954 Corgin Street, Hudson, OH 44236 bradshaws@myhost.co
Catherine Leonard 64 Stanhope Drive, Pittsburgh, PA 15237 family@ myname.com
Carl Brown 653 Liberty Avenue, Wilmington, NC 28403 brownc2521@lycos.com
Tom Stowe 26 N. Hills Road, Chandler, AZ 85226 webunited@gmx.net
Helen McSweeny 817 Providence Hwy, Boston, MA 02116 helenmcsweeney@hot-mail.com

1&1 WebDatabase

1&1 takes the guesswork out of gathering, organizing, displaying, and maintaining large amounts of information with the 1&1 WebDatabase. Setup is a breeze! Simply select a template in the database building kit. Or customize your own database – just click the fields you'd like to include and you're ready to go!



1&1 WebStatistics

Understand visitor dynamics with 1&1 WebStatistics. Gather all of the information you need and generate a detailed analysis of how your website is performing. Display the information in the format you choose – pie charts, bar graphs, or simple numeric output. Use the data to improve navigation and maximize the success of your site!

FOR MORE DETAILS GO TO 1AND1.COM

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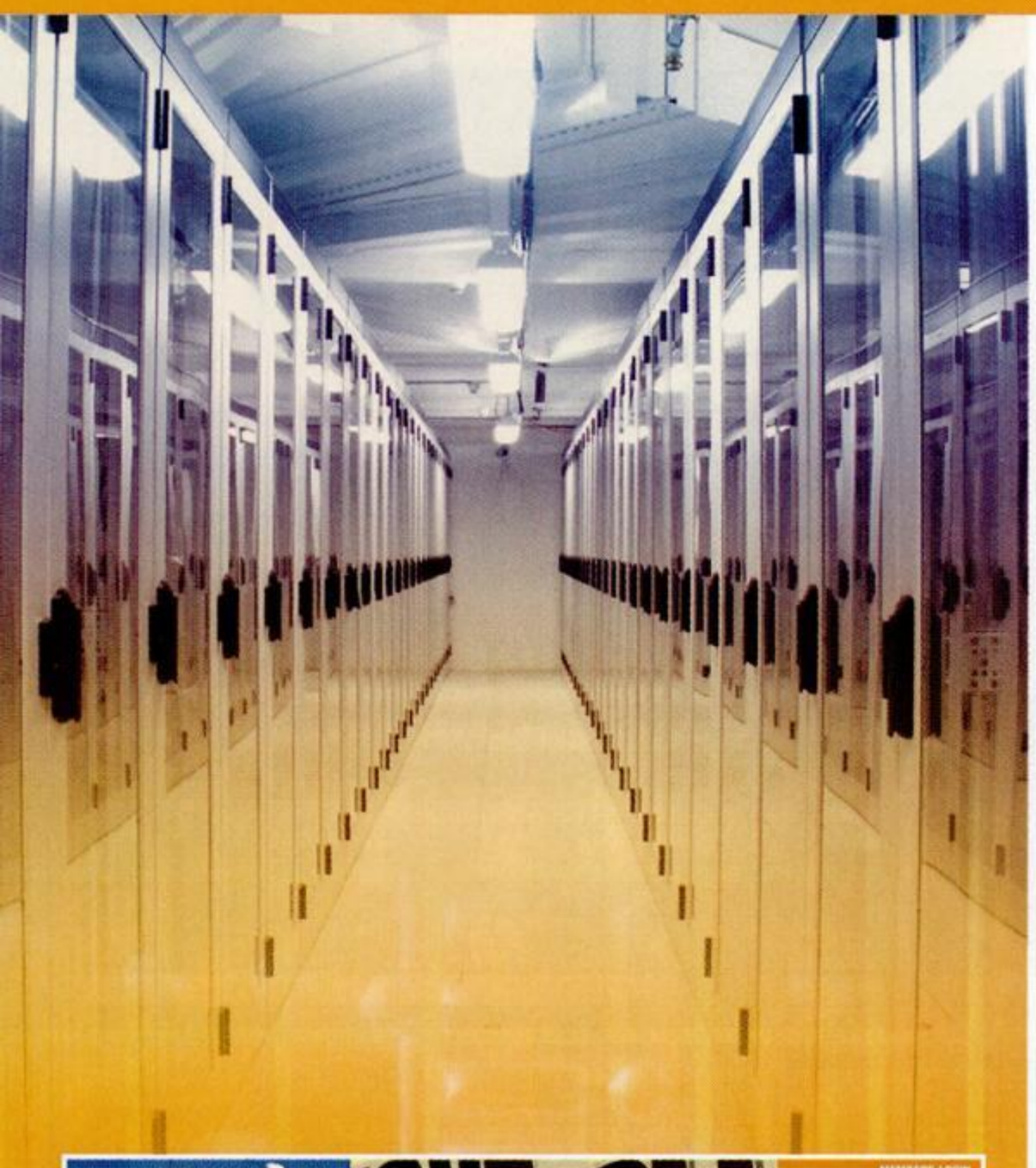
1&1 SERVERS



Whatever you need from a dedicated server, 1&1 has the definitive solution.

Dedicated servers from 1&1 offer a broad range of functionality so you can choose the solution that best fits your needs and experience level. From a fully maintained Managed Server, to a Root Server with maximum flexibility and control, to a solid and secure Windows Server, 1&1 will help you take your web presence to the next level.

$25 Million Data Centers

- 99.9% uptime guaranteed
- 18,000 MBit connectivity
- 500 peerings with 250 different providers for optimized routing

Fully Managed Servers

- As easy as shared hosting but with added power and performance
- Complete monitoring, management and maintenance by 1&1
- Security updates and system maintenance
- Server configured and installed by 1&1
- New innovative interactive tools included

Windows Server: Web Edition

- Included with Server I & II
- Designed for dedicated web serving and hosting
- Remote Desktop Control
- ASP, ASP.NET, MSDE

Windows Server: Standard Edition

- Included with Server III
- Designed to support sophisticated and demanding applications
- Exchange Server installable
- Includes Active Directory, Streaming Media Server, Terminal Services

Plesk 7.5 Reloaded Included with All Root Servers

- Use, create and manage your Linux-based system
- Create new e-mail accounts
- Manage web spaces plus up to 100 domains
- Become your own host by partitioning your server into shared web space

"Moving to 1&1's Managed Server III has made our business much more efficient. 1&1 gives us our own dedicated server, but we still get the seamless, maintenance-free service of a shared hosting site. Plus, we get all the space we need for our high resolution graphics files and print samples."

Nikki Woodruff
www.hotcards.com

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$600 Productivity Software Suite INCLUDED*

1&1 ROOT SERVERS

For Maximum Flexibility and Control

- Plesk 7.5 Reloaded Control Panel pre-installed
- Operating System: Fedora Core 2 Linux
- Advanced Recovery Tool lets you instantly reboot
- 24/7 phone support

PLESK 7.5 RELOADED

1&1 MANAGED SERVERS

For Performance and Convenience

- All the features of shared hosting with the power of a dedicated server
- Continuously updated firewall protection
- 1&1 user-friendly Control Panel for easy administration
- Includes Dedicated SSL Certificate at no extra cost
- 24/7 phone support

1&1 WINDOWS SERVER 2003

For Security and Reliability

- Windows Server 2003 Standard Edition with Server III (Web Edition with Server I & II)
- Unlimited administration access
- .NET Framework already integrated
- 24/7 phone support

	1&1 ROOT SERVERS	1&1 MANAGED SERVERS	1&1 WINDOWS SERVER 2003
SERVER I ■ Intel Celeron 2.0 GHz ■ 256 MB DDR-RAM ■ 40 GB IDE hard drive ■ 500 GB bandwidth included	$49 PER MONTH	$59 PER MONTH	$69 PER MONTH
SERVER II ■ Intel Pentium 4, 2.4 GHz ■ 512 MB DDR-RAM ■ 40 GB IDE hard drive ■ 500 GB bandwidth included	$69 PER MONTH	$79 PER MONTH	$89 PER MONTH
SERVER III ■ Intel Pentium 4, 3.06 GHz Processor with Hyper-Threading ■ 1 GB DDR-RAM ■ 120 GB IDE hard drive ■ 500 GB bandwidth included	$99 PER MONTH	$109 PER MONTH	$129 PER MONTH

*$6.99 shipping & processing fee applies
$99 one-time setup fee

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1&1 eSHOPS

Easy, yet sophisticated e-commerce solutions.

1&1 eShops are as powerful as any major online retailer, but with no software or hardware to install. Online wizards and a wide range of professionally designed templates offer such simplicity that your online shop can be up and running in less than an hour. Plus, 1&1 eShops are fully compatible with your current site, regardless of which hosting provider you use. 1&1 eShops include all the web space and bandwidth you need and require no additional hosting plan to get your online storefront open for business.

shop.GitanoSoftware.net
On sale!!
$50 Summer Sale
All our Clarion utilities are on sale, just $50 each! or $500 for the bundle.
$100 off gReg
For a limited time you can get the best registration tool available for just $199. Do you have a competitive product? Save even more, get gReg for just $149
Our very popular Developer Design Package is still on sale. Save $125 and get everything you need to make your application shine: Application Logo, Application Icon, Splash Screen, Product Box Image, and Wallpaper.
Buy the bundle, save & get some freebies!
Just $299 with FREE shipping
BONUS 1 - Free wallpaper collection
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$600 Productivity Software Suite INCLUDED*

"A great experience is what we have encountered with our new 1&1 Developer eShop. 1&1 gives us exceptional value, high quality, and a level of customization we never had before. With very little effort we can offer discounts, purchase orders and more."

Jesus F. Moreno
shop.gitanosoftware.net

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MONEY BACK GUARANTEE

90-DAY MONEY BACK GUARANTEE

100% Satisfaction or your Money Back

30+ professional shop templates

- Ready to be loaded with your products
- Customizable with different fonts, colors and positioning

Secure online payments via PayPal and WorldPay

- No merchant account necessary with PayPal
- Connect with 35,000 loyal PayPal users – with no paperwork or bank application

8 easy-to-use wizards

- Step-by-step guides
- Quickly and simply configure:
  - Shopping basket
  - Order processing
  - Tax clearing
  - Delivery methods
  - Payment settings

SSL secured

- All shop-based settings created in SSL secured pages
- Maximum integrity of confidential data
- Fully protected from third-party access

Easy order processing

- Choice of shipping methods
- Multiple currencies supported
- Tax clearing server included

Dedicated SSL Certificate

A Dedicated SSL Certificate from 1&1 shows your customers that your site is secure and they can conduct transactions with confidence. The certificate is included with the Developer eShop and can be added to the Business or Professional eShop for just $49 per year.

Hosting Included

With all 1&1 eShops, no additional hosting package is needed because web space, traffic and even e-mail accounts are all included! Plus, there's no software to install and 1&1 handles all the maintenance and updates so you can focus 100% on your online business.

And more!

- Google Conversion Tracking
- Froogle Product Search
- Customer account administration
- Easy account management for your customers

BUSINESS eSHOP

- 50 MB web space
- 10 GB monthly transfer volume
- 50 item product catalog
- Choice of 2 shipping methods
- 24/7 phone support

$9.99 PER MONTH

PROFESSIONAL eSHOP

- 300 MB web space
- 30 GB monthly transfer volume
- 200 item product catalog
- Unlimited item variants
- Choice of 5 shipping methods
- Multi-currency support
- Import/export customer data
- Online credit card clearing with PayPal and WorldPay
- Tax clearing server (calculates taxes by state, county and city)
- 24/7 phone support

$29.99 PER MONTH

DEVELOPER eSHOP

- 1200 MB web space
- 60 GB monthly transfer volume
- Unlimited item product catalog
- Unlimited number and depth of sub-categories
- Unlimited shipping methods
- Multi-currency support
- Import/export customer data
- Online credit card clearing with PayPal and WorldPay
- Tax clearing server (calculates taxes by state, county and city)
- FTP access
- Customer account management
- Fully customizable templates
- Dedicated SSL Certificate included
- In2site Live Dialogue
- 24/7 phone support

$49.99 PER MONTH

No setup fee

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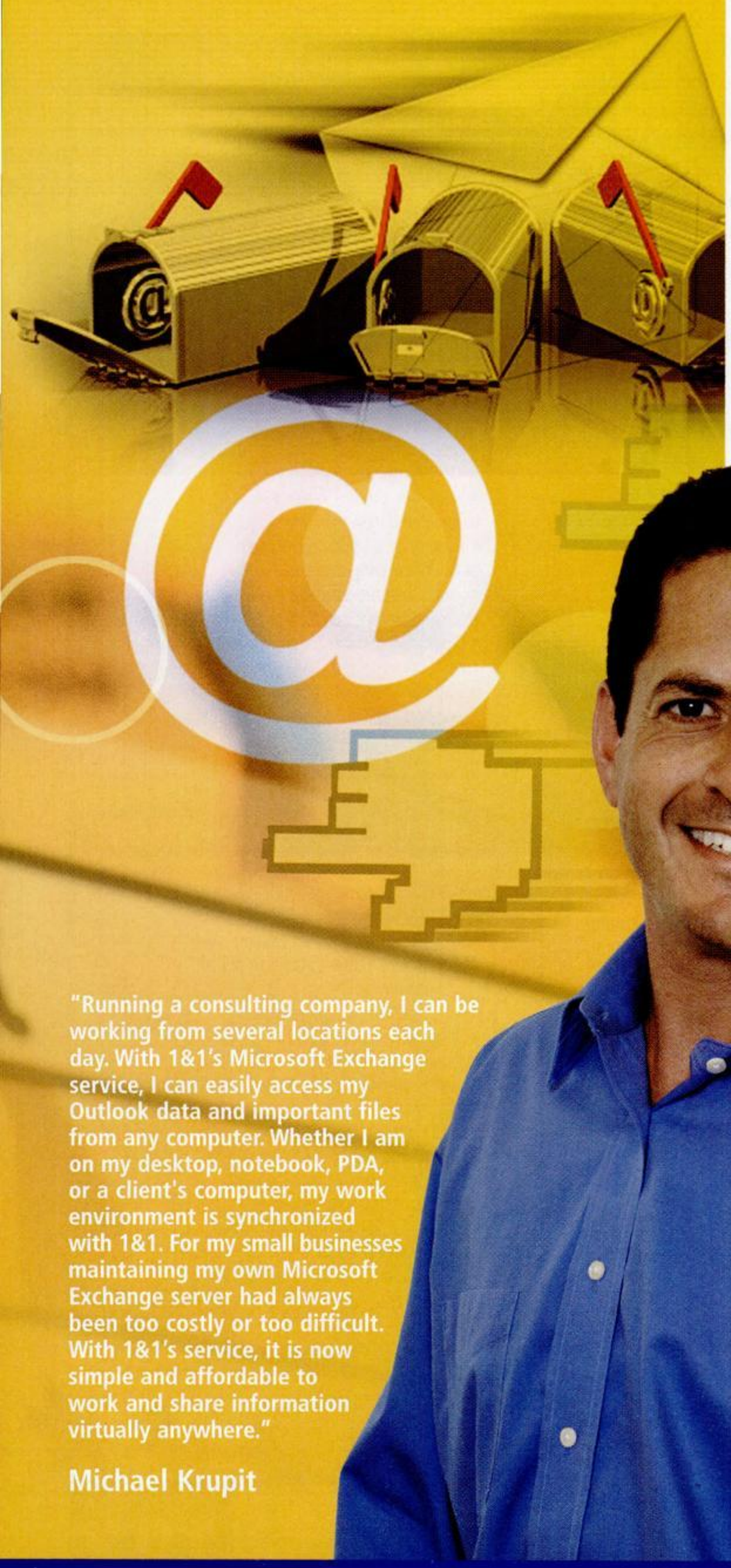
1&1 MAIL

1&1 gives you two great ways to get mail.

Whether you need e-mail for personal use or business use, 1&1 has your perfect solution. 1&1 Instant Mail is ideal for private users, allowing you to send and receive personalized mail from your own domain. 1&1 Microsoft Exchange Hosting gives you or your entire business reliable, affordable, up-to-date access to your critical information – anytime, anywhere.



"Running a consulting company, I can be working from several locations each day. With 1&1's Microsoft Exchange service, I can easily access my Outlook data and important files from any computer. Whether I am on my desktop, notebook, PDA, or a client's computer, my work environment is synchronized with 1&1. For my small businesses maintaining my own Microsoft Exchange server had always been too costly or too difficult. With 1&1's service, it is now simple and affordable to work and share information virtually anywhere."

Michael Krupit

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MONEY BACK GUARANTEE

90-DAY MONEY BACK GUARANTEE

100% SATISFACTION OR YOUR MONEY BACK

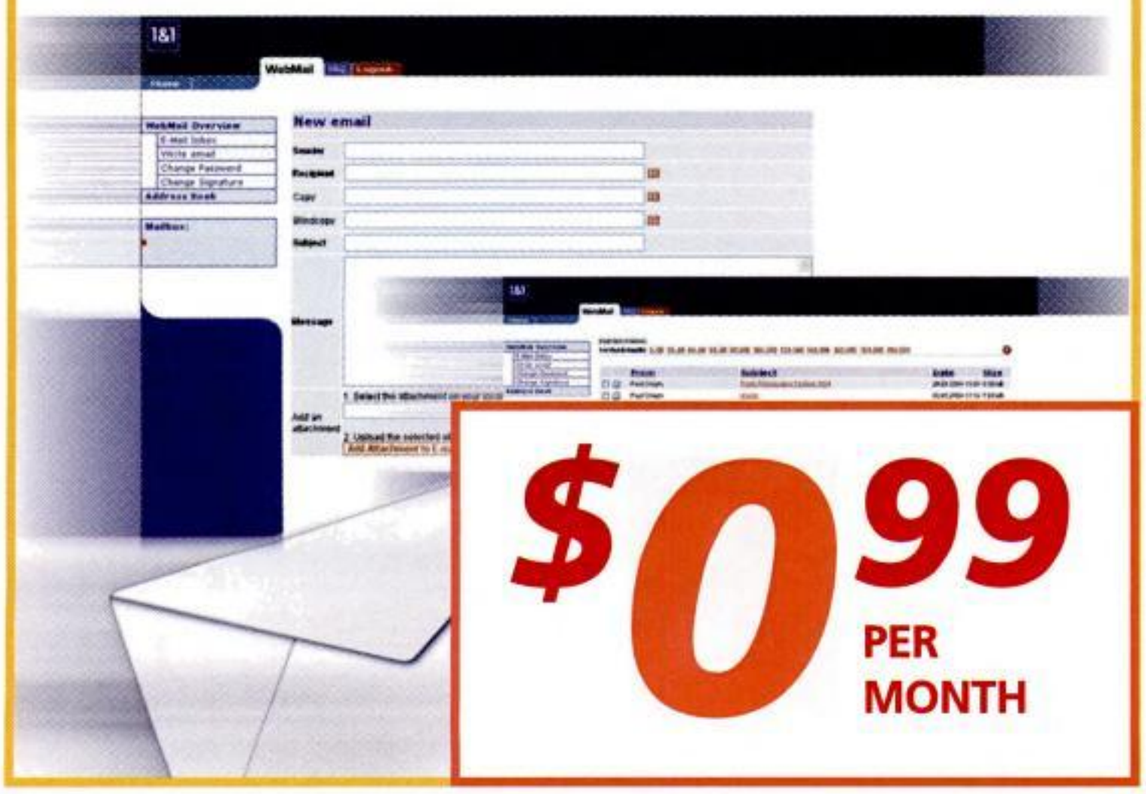
1 GB MAILBOX SPACE

1&1 INSTANT MAIL

Mail in an Instant!

What does your ambiguous e-mail address say about you? Are you ready to take your personal e-mail to a more professional level? Then 1&1 has your solution. Simply sign up for 1&1 Instant Mail and then add on your domain. In just minutes you'll have the power to send and receive e-mail from your own domain name.

- 5 e-mail accounts with 1 GB space each – IMAP & POP supported
- Spam filter included for all 5 accounts
- Virus protection for all 5 accounts
- 10 e-mail aliases
- Includes 1&1 WebMail – access mail anytime from anywhere
- Send and receive e-mail from your domain
- Easy setup via the 1&1 Control Panel
- 24/7 phone support



$0.99 PER MONTH

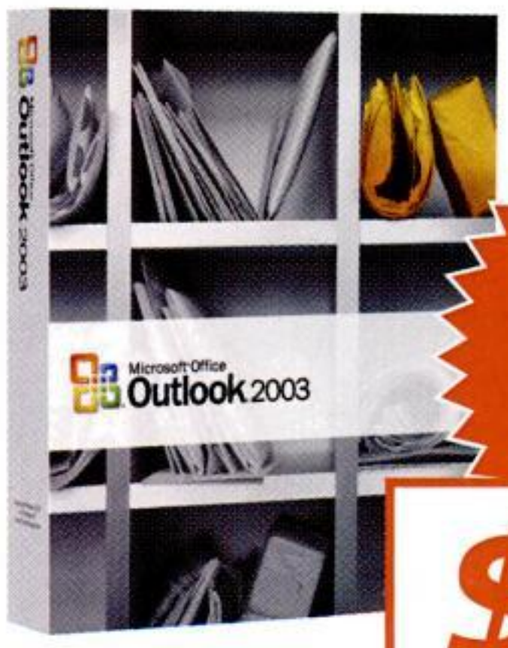
No setup fee

1&1 EXCHANGE HOSTING

Exchange made easy!

Your Microsoft Exchange Hosting Plan from 1&1 lets you enjoy the communication and collaboration features and benefits of Microsoft Exchange without the hassles of maintaining your own Microsoft Exchange server. Read, send and receive e-mail and access your public folders, contacts and calendars at anytime, from anywhere via Microsoft Outlook® or any web browser.

- Includes 1 Exchange account
- 1 GB e-mail storage space
- Group functionality tools
- Outlook® Web Access
- Synchronize your data with ActiveSync
- Virus Scanner installed on the Exchange Server
- Spam filter included in Outlook 2003
- 24/7 phone support



OUTLOOK® 2003 INCLUDED*
With all Exchange accounts

*$6.99 shipping & handling applies.

$6.99 PER MONTH

No setup fee

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WEBSITE IN AN INSTANT

Create your ideal website in just 20 minutes.

1&1 makes it fast and easy to establish your presence online. Simply sign up for 1&1 Instant Website and then add on your domain. Whether you're a beginner building your first site or an experienced programmer looking for an additional site with no programming hassles, 1&1 Instant Website offers an ideal solution.

1&1 INSTANT WEBSITE

- Create a 12-page site with WebsiteCreator
- Choose from 120 professionally designed templates
- Get online easily with the 5-step wizard
- Launches from the 1&1 Control Panel – no software to install
- 15 e-mail accounts, 1 GB mailbox space each
- 1&1 WebMail
- 24/7 phone support

$2.99 PER MONTH

1&1 INSTANT DOMAIN

Domain in an Instant!
Are you looking to make your mark? Then register a domain name with 1&1 – 4.6 million domains are already registered worldwide – and protect your business idea, brand, family name, or hobby.
Establish your web identity today!

- DNS management
- Transfer existing domains at no additional cost
- Catch-all e-mail, auto-responders, unlimited e-mail forwarding
- Domain parking for future use
- Masked website forwarding

REGISTER DOMAINS FOR:
$5.99 PER YEAR
.COM .NET .ORG .INFO .US .NAME

Member of united internet

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Unlike the free towel, which you get immediately at the NFL game, you don't get your iPod until you convince five of your friends to also sign up for a service. The more friends you have sign up, the more valuable the free product. For example, if you get nine people to opt into services, you're eligible to receive an iPodPhoto.

So where's the money for Gratis Internet? The company says vendors pay an average of $40 to $60 per referral. If it takes six "sign-ups" (you and five friends) to get a $300 iPod, the company could either eat $60 on the deal or make as much as $60, depending on the referral values. Of course, the company is making money off everyone who signs up but fails to meet the requirements for the free iPod.

A Gratis rep says the company is profitable and on track to hit $15 million in revenues. Gratis is about to ship its 10,000th iPod and normally sends out 500 "free" iPods a week. So is it a scam? Not in any way the Dog can determine. In fact, media scrutiny by the *New York Times, Inc.*, *Wired,* and *NBC* has found the operation to be on the up and up. The company even has a clean bill of health from the local Better Business Bureau. That doesn't mean you should jump in with both feet, though. You should still read the fine print of any offer you sign up for online. For instance, if you sign up for a credit card, is there an annual fee attached? Or do you have to hold the card for a minimum period? Details like these can turn "free" into *not* free very quickly. And be sure to note the cancellation policy for any offer you sign up for.

As for "product tester" offers, the Dog is highly skeptical of these, which usually originate as spam. From the few the Dog has seen, the product testers are usually subjected to a series of long "surveys" that offer nothing but products for you to buy. For the most part, they're not worth the amount of spam you're going to get once you sign up. Woof.

PRODUCT RECALL

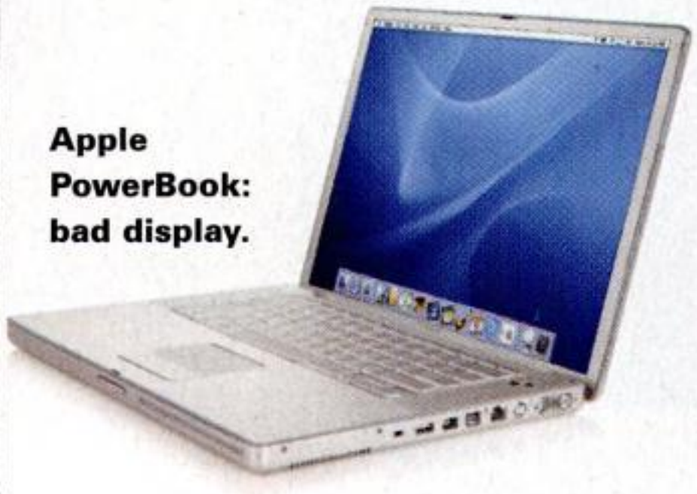
Psion Teklogix has recalled a small number of handheld-computer power supplies that might overheat and cause fire. The company has received nine reports of the power supplies overheating, but no injuries have been reported.

The 2,500 bad AC adapters were sold with the Psion Teklogix Netpad, Netbook, and Netbook Pro handhelds. Affected adapters will have a label on the back of the unit that reads "Sunpower (UK) Ltd," the part number 9NA0180300, and a date code (D/C) of 034810. The faulty adapters were manufactured in China and were sold individually, as well as with the handhelds, between December 2003 and October 2004.

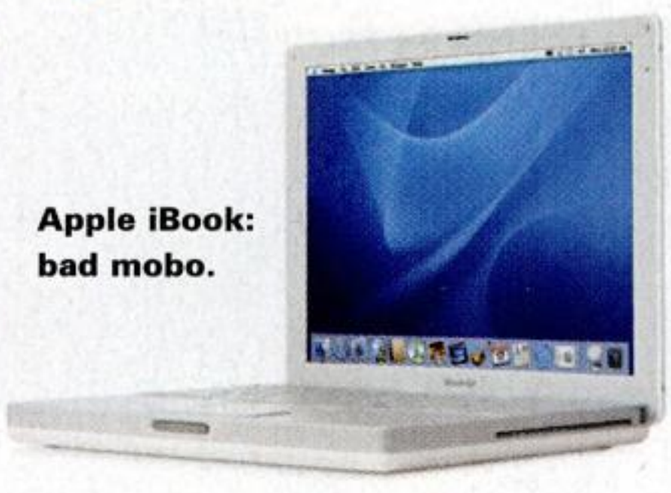
Consumers who have a bad adapter are advised to immediately stop using it and to contact Psion Teklogix for a free replacement. Contact Psion at 800.387.8898 between 4 a.m. and 11 p.m. EST between Monday and Friday, or e-mail the company at adapter.recall@psionteklogix.com. More information is available at www.psionteklogix.com.

Apple has extended a motherboard-repair program for certain iBook notebook computers that exhibit distorted or scrambled video, lines, intermittent video, video freezing, and blank screens. The iBooks in question have serial numbers in the range of UV117XXXXXX to UV342XXXXXX and were made between May 2001 and October 2003. Apple first announced the program in January 2004, but the company recently announced it had expanded the program to include more notebooks. Apple will cover the cost of shipping and repairing the affected notebooks and the company will also reimburse consumers who paid to have their notebooks repaired. For more information, visit www.apple.com/support/ibook/faq/ or call 800.275.2273.

This is the second product repair for Apple in recent months. In September, Apple voluntarily offered to replace the 15-inch screens in PowerBook G4 notebooks. PowerBooks with serial numbers of V7334xxxxxx to V7345xxxxxx, and QT331xxxxxx to QT339xxxxxx are prone to developing white spots on the screens. Both aluminum and titanium versions of the notebooks made between July 2003 and November 2003 are affected. For more information visit www.apple.com/support/powerbook/displayprogram/ or call 800.275.2273.



Apple PowerBook: bad display.



Apple iBook: bad mobo.

Everything Offline

DEAR DOG: After purchasing a connector from EverythingComputing.com for my Gigabyte motherboard, I received an order confirmation. Unfortunately that was the last thing to go right. After about a week, I still had not

"THE LIGHTS MAY BE ON AT EVERYTHING COMPUTER, BUT IT DOESN'T LOOK LIKE ANYONE'S HOME."

received a shipping notification, and when I checked my credit card, my order had not yet been charged. So I wrote the company several e-mails, but didn't hear from anyone. After two weeks, I went back to the web site to search for a phone number but the contact page was blank and I noticed the web site hadn't been updated since 2003. I would not recommend doing any business with this company.

— ISAIAH J. ANGEL

THE DOG RESPONDS: Good advice, Isaiah. The lights may be on at Everything Computer, but it doesn't seem like anyone's home. E-mails and phone calls to the registered owner of the web site netted zero results, and browsing Everything's web site turned up numerous links to nothing but gibberish. A search of the Better Business Bureau and Resellerratings.com didn't turn up any complaints—nor any record of the company, for that matter. ■

Got a bone to pick with a vendor? Been spiked by a fly-by-night operation? Sic The Dog on them by writing **watchdog@maximumpc.com**. The Dog promises to get to as many letters as possible, but only has four paws to work with.

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FIGHT FOR YOUR FAIR-USE RIGHTS

Maximum PC **shows you how to get the most out of your music and movies—whether the entertainment industry wants you to or not.**

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MEDIA HOW-TO

The entertainment industry thinks of them as the Four Horsemen of the Digital Apocalypse: the Internet, MP3 audio compression, Diamond Multimedia's Rio MP3 player, and Napster. By the time all four had become household names, we knew the revolution had begun. Anything that could be digitized could be duplicated, downloaded, distributed, and and enjoyed in ways never before possible.

But revolution and chaos are like Europeans and Nutella: Where you find one, you're sure to find the other. The entertainment industrial complex, appalled by file sharing and terrified of the Internet, lobbied a gullible, greedy U.S. Congress into passing the Digital Millennium Copyright Act, a heinously overreaching law that tramples on consumer rights. Record labels, meanwhile, grudgingly permitted a few web sites to sell legitimate digital-audio tracks, but failed to develop universal compression standards and digital rights management (DRM) schemes, a uniform licensing policy, or even a consistent pricing model.

So now you can buy a DVD-Video, but it's illegal to decrypt the disc and create a Divx file that you can play back on your PDA. You can buy a song from *iTunes*, but the copy protection isn't compatible with your Rio Carbon player. Or you'll put an audio CD in your CD-ROM and watch helplessly as the copy protection crashes your system. *Good job, guys!*

In the midst of all this bedlam, control is conspicuously shifting back into the hands of an industry that still regards the Internet and digital distribution with a level of panic and horror befitting an Ebola breakout. Fortunately, there are still ways to exercise your fair-use rights, whether the industry likes it or not. We're about to show you how to get around the technological blockades, so you can reap the humungous benefits of the digital-entertainment revolution.

HAVE A RIPPING TIME WITH YOUR DVDS!

Your laptop lacks an integrated optical drive, so you'd like to rip your DVDs onto its hard drive. You're bored in the jury box, so you'd like to watch a movie on your PDA or handheld video player. Your kids are too lazy to put DVDs back into their protective cases, so you'd rather they destroy backups of the discs instead of the originals. Each of these scenarios is an example of "fair use" as defined by U.S. copyright law.

The Digital Millennium Copyright Act of 1998 (DMCA) didn't revoke the concept of fair-use rights; but by summarily prohibiting the circumvention of copy protection, it made these rights nearly impossible to exercise. As a result, each of the fun-making activities described above is virtually impossible to do *legally*. And we think that's just ridiculous.

We're not out to vilify the entertainment industry, which encompasses thousands of record labels, movie studios, game publishers, and the artists who create the products the industry sells. They all have a serious and legitimate beef with intellectual-property pirates. As a magazine publisher, we're equally interested in protecting our *own* intellectual property rights. The fact is, music, movies, and games appear on the Internet with appalling speed after—and sometimes even before—their commercial release. And don't kid yourself that casual piracy—such as downloading a movie or a game without paying for it, and then justifying the act with the contention that you wouldn't have paid for it anyway—doesn't hurt anyone.

Pirates should also drop their whining claims that the entertainment industry makes more money than it's entitled to. Companies invest huge amounts of money in every title they release, and the rise of peer-to-peer piracy only discourages them from taking risks. Why should a publisher develop an innovative new game or movie that might lose money at retail, only to watch it become the latest, hottest download on BitTorrent? Wouldn't it be safer for them to push out *Doom 11*, *The Sims: Living Dead* expansion pack, or *Spider-Man 8*, properties that are reasonably sure to turn a profit?

The entertainment industry will sort out its issues with technology some day; until then, we'll need to perform work-arounds and use software that can be used for purposes both legal and illegal in order to exercise our fair-use rights.

Rip it to Divx

Let's start with commercial DVDs. In a perfect world, you could simply drag the contents of your DVD's VIDEO_TS folder onto your laptop's hard drive and play the movie with a software DVD player. The content scrambling system (CSS) used on most commercial DVDs, however, prevents you from doing that. But the cat got out of the bag in 1999, when an industrious lad named Jon Johansen cracked CSS so he could watch movies on his Linux PC. Once Johansen's simple code was distributed, there was no way—short of altering the DVD spec and rendering every DVD player obsolete—to shove the cat *back* into the bag.

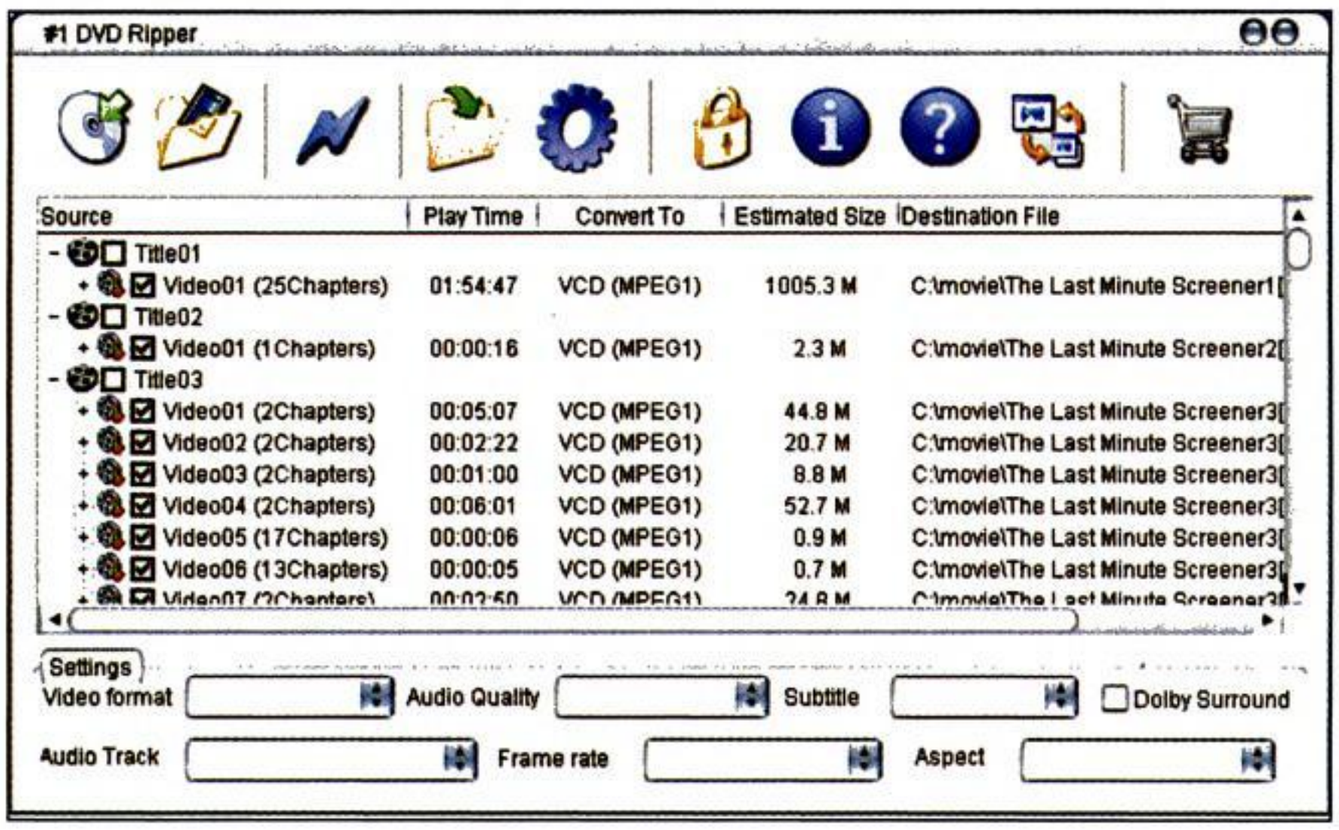
Software that breaks CSS encryption is illegal under the DMCA, so you won't find it at Best Buy. But that hasn't stopped it from being sold by companies located in certain tropical countries lacking extradition treaties. Take Slysoft's *AnyDVD* (**$40, www.slysoft.com**), for instance. This program will decrypt a DVD on the fly just as if the CSS encryption wasn't there at all. DVD-video files can consume up to 8.5GB of your hard drive, however, and storage space on laptops and portable devices is notoriously scarce. Wouldn't it be so much better if an application not only ripped the contents of your DVD, but also compressed it into a single file for playback? That's just what *#1 DVD Ripper* does (**$35, www.dvdtox.com**), and we'll show you how easily it's done.

If you choose to buy this software, however, be aware that using it not only violates U.S. law, but because it's sold by an "offshore" company, you're pretty much SOL if you buy the product and then decide you don't like it.

#1 DVD Ripper at Work

Before you begin, you'll need to download the codec (compressor/decompressor) you wish to use to compress your video. In this example, we'll use version 4.1.2 of the popular—and free—Divx codec. We use an older version of the codec because that's what the developer of *#1 DVD Ripper* recommends. Run the installation routines for both Divx and *#1 DVD Ripper* and you'll be ready to go.

Once you've launched *#1 DVD Ripper*, click the disc/arrow icon in the far left side of the application to peek into the DVD's contents. DVDs often contain tons of material you might not ➔


#1 DVD Ripper
Source
Play Time
Convert To
Estimated Size
Destination File
Title01
Video01 (25Chapters) 01:54:47 VCD (MPEG1) 1005.3 M C:\movie\The Last Minute Screener1
Title02
Video01 (1Chapters) 00:00:16 VCD (MPEG1) 2.3 M C:\movie\The Last Minute Screener2
Title03
Video01 (2Chapters) 00:05:07 VCD (MPEG1) 44.8 M C:\movie\The Last Minute Screener3
Video02 (2Chapters) 00:02:22 VCD (MPEG1) 20.7 M C:\movie\The Last Minute Screener3
Video03 (2Chapters) 00:01:00 VCD (MPEG1) 8.8 M C:\movie\The Last Minute Screener3
Video04 (2Chapters) 00:06:01 VCD (MPEG1) 52.7 M C:\movie\The Last Minute Screener3
Video05 (17Chapters) 00:00:06 VCD (MPEG1) 0.9 M C:\movie\The Last Minute Screener3
Video06 (13Chapters) 00:00:05 VCD (MPEG1) 0.7 M C:\movie\The Last Minute Screener3
Settings
Video format
Audio Quality
Subtitle
Dolby Surround
Audio Track
Frame rate
Aspect

Selecting the proper chapter and title is easy, if you know what you're looking for. The first thing to do is check the boxes for the chapters you wish to rip.

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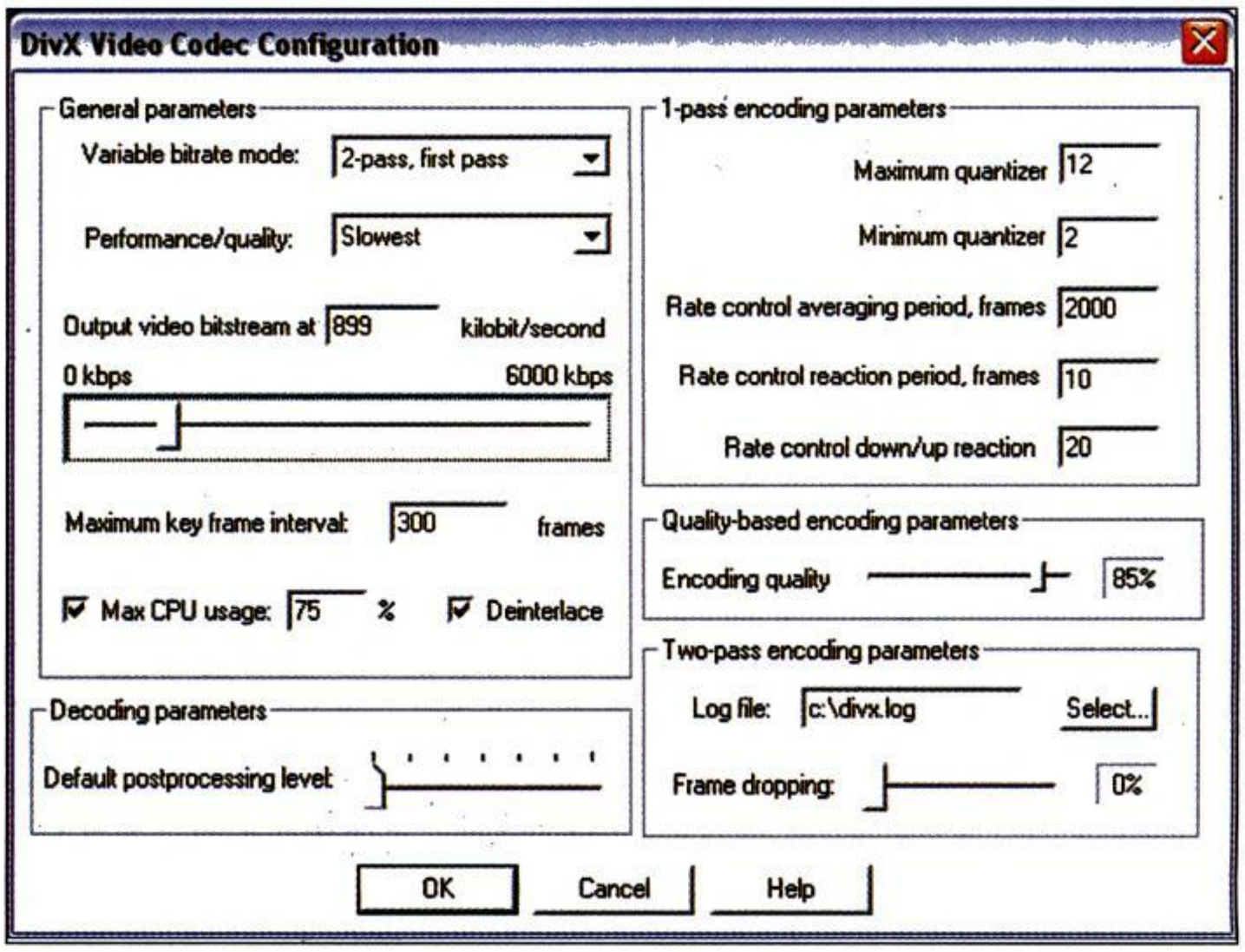
want in your portable video, so the first thing to do is locate the main movie (frequently labeled "Title 01, Video 01"). The file you're looking for will be obvious because the play time equals the length of the film. (Note: To avoid running afoul of U.S. law, we used a film that does *not* use CSS encryption.) Uncheck everything else. (If you click on the + sign, you can select individual chapters and rip selected scenes from the movie.)

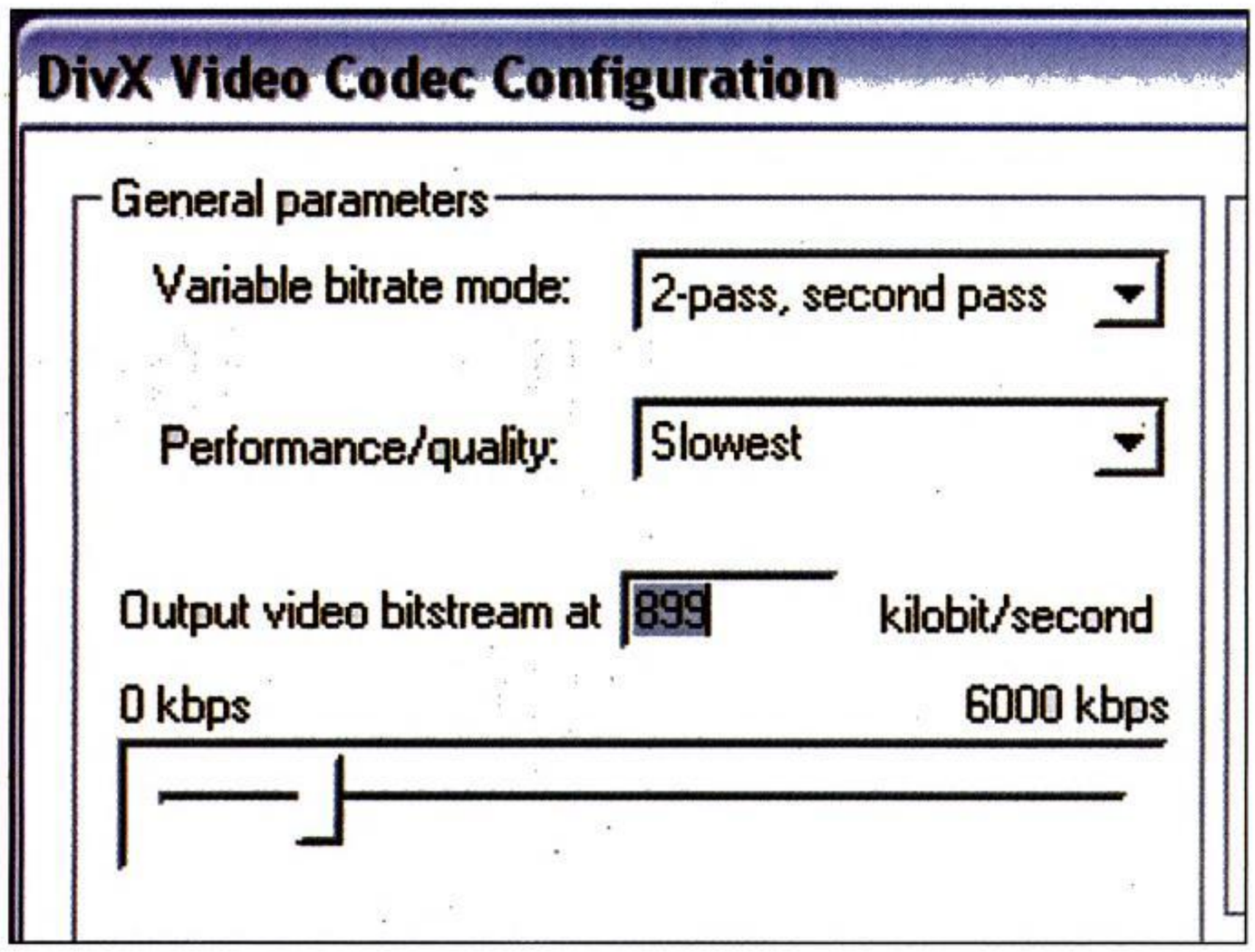
The next step is to configure the settings for your codec (initiates can take comfort in knowing this needs to be done only once; power users can go crazy experimenting with the settings). Click the gear icon and switch to the Output tab. Change the "Default output video format" to "Avi (Divx, MPEG-4)," and then change the Video Codec to "Divx Codec."

Click the Configure button and change the Encode Performance setting to "Slow" to achieve the best-quality encoding. Now it's time to choose a bit rate for your video. Just as with MP3s, the higher the bit rate, the better the quality and the larger the file size. You'll get good results with a 900Kbps bit rate.

The "Encode mode" drop-down list will offer a choice of settings, but we strongly recommend using multi-pass encoding for Divx (and other MPEG-4) video, so select "2-pass, first pass." This tells the codec to scan the video before encoding, looking for sections that have fast motion and/or a lot of detail that will benefit from a quick throttle-up on the bit rate. This data will be stored in a log file, which the encoder will use on subsequent passes, devoting additional bits to scenes that demand more detail. The result is that while your movie will take longer to encode, the image quality will be *much* better.



There's nothing inherently complicated about running a two-pass Divx encode. You just have to know which settings to use.



Setting up the second encoding pass is as simple as changing a single option.

We'll leave the rest of the options at their default settings, except for the name of the log file, which we'll manually change to coincide with the movie name. That way, if we choose to re-encode the movie later, we won't have to rerun the first pass. If you feel like pulling a Little Red Riding Hood by exploring the scary menus, you'll see a staggering number of options, each of which is more cryptic than the last. Explaining all these options is beyond the scope of this article, but we have provided a list of resources on page 39 for those of you who might want to delve deeper. For now, click OK and trot back to the main screen.

Now we're ready to rip the movie. Press the lightning-bolt icon and get ready to wait. It will take a few hours to do the first pass. No one seems to know why, but some sessions will produce an "AVIStreamSetFormat failed" error message. If this happens to you, go back to the Divx configuration panel and select one-pass encoding (use the

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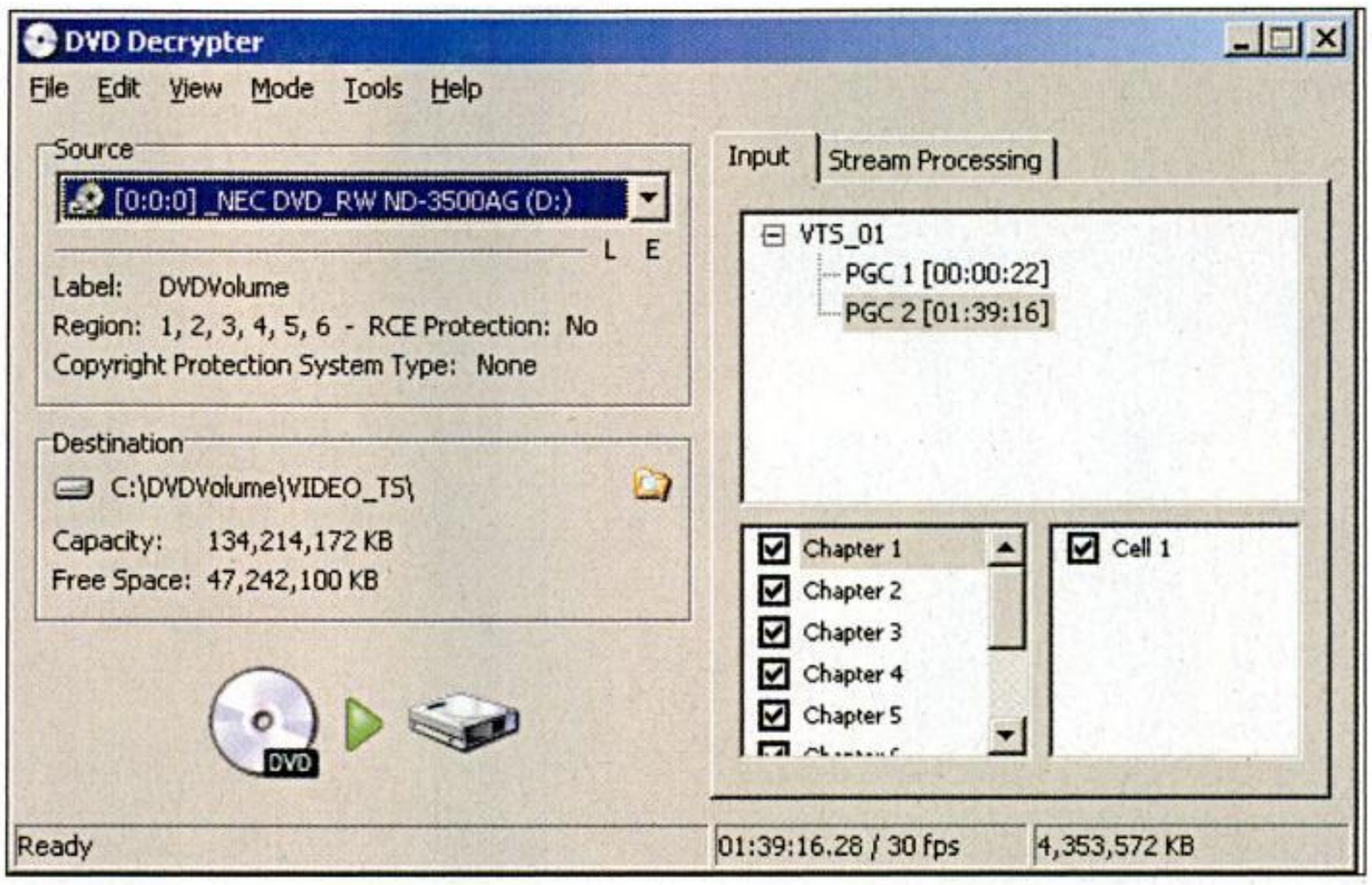
Bitrate Calculator button to select the ideal bit rate) to get around the problem.

Once that's finished, you need to change the codec options for the second pass. Go back into the Settings panel and click the Output tab. Press Configure and change Variable bitrate mode to "2-pass, second pass." Press OK, then click the Size/Bitrate tab. Make sure you select the proper bitrate for audio—we like 192Kbps for the best balance of sound quality and size. Press OK again, and then press the OK button on the next screen as well. In a few hours you'll have a Divx version of your movie!



It's pretty obvious that the highlighted file is the main movie stream. The other file is probably an irritating info screen.

More Fun with DVD Ripping

You'll find oodles of methods for converting DVDs to compressed MPEG-4 video, including this method that's particularly well suited to creating files that are playable on your Pocket PC or portable video player—and it doesn't cost a cent (woo-hoo!). You'll need two applications: *DVD Decrypter* (**www.dvddecrypter.com**) and *AutoGK* (**www.autogk.com**). Install both applications (*AutoGK* actually installs a bundle of freeware apps and runs them as if they were a single application).

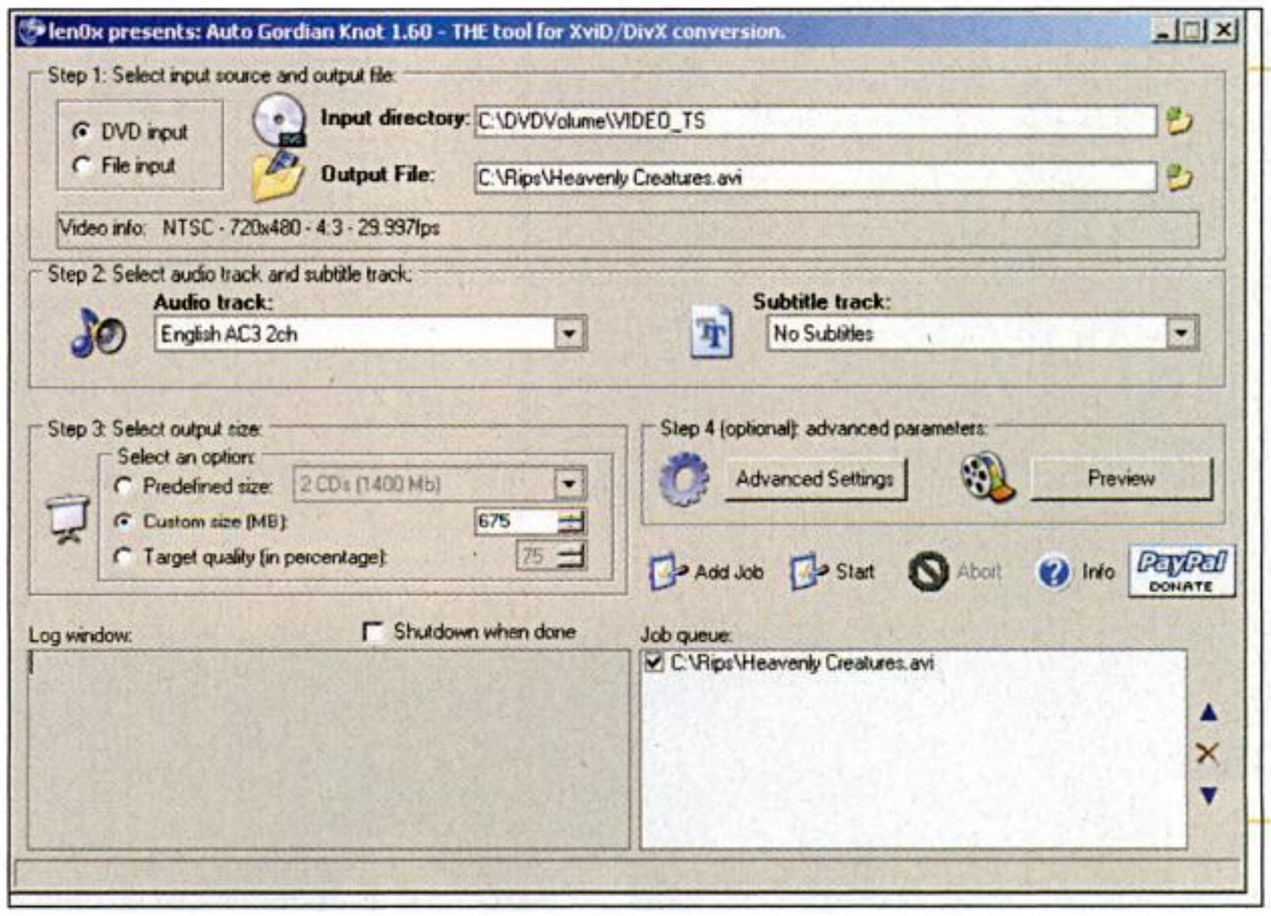
Drop your DVD into your optical drive and launch *DVD Decrypter*. From the menus, select Mode > IFO, which will produce files in a format we'll need later. Now go to the Edit menu and select "Select Main Movie PGC," which will automatically select the main movie for you. *DVD Decrypter* will create a default destination directory, but you can change it by clicking the folder under Destination. Next, click the rip icon and kick back—this could take a while. You'll hear a cheery tune when the software's done.

The next step is to convert the results from the DVD-Video format to a single AVI file. *AutoGK* not only does this, but it also takes the guesswork out of creating video that's constrained to a specific size (for burning to multiple CDs, as opposed to a single DVD, for example) or a specific resolution (for exporting to a Pocket PC). Fire up *AutoGK* and click the folder next to Input Directory. Navigate to the VIDEO_TS folder that *DVD Decrypter* dumped its files into and click OK. Specify a location for your AVI under Output File (*duh*).

If you're creating video for playback on a PC or a laptop, move your mouse to the box labeled "Step 3: Select output size" and select either "Predefined size," "Custom size," or "Target quality." Obviously, the smaller the file size, the lower the resulting quality.

If you're creating video for playback on a Pocket PC or a portable video player, select "Custom Size" and tell *AutoGK* how big you want your file to be (based on your available storage). Click the Advance Settings button in the Step 4 box. Under the heading "Resolution settings," click the "Fixed width" radio button. Here's where you indicate the maximum width—in pixels—your portable device can handle. If you have a fancy-ass VGA Pocket PC, for example, enter 640 in the box next to the button. Click OK, click the Add Job button, and then click Start.

We guarantee the conversion process will take longer than you anticipated, so if you haven't finished reading *The Da Vinci Code*, now's a good time. When you reach the end and find out the butler was responsible for everything, you'll have an AVI file that can go wherever you do. ➔



We've selected a custom file size of 675MB for decent playback quality on our laptop.

THE MATRIX ONLINE

TEEN
T
Mild Language
Suggestive Themes
Violence
ESRB CONTENT RATING www.esrb.org

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The Matrix Online is the future of the Matrix, picking up right where the trilogy left off. The revolution is over, but within the Matrix a secret war still rages—a war of control between the Machines, the Exiles, and the people of Zion. Come join the continuing storyline of the Matrix where you decide who to oppose and what to believe. Only your courage and perseverance can protect the legacy of Neo's sacrifice. Jack in.

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- Defeat your enemies using devastating martial arts maneuvers and gunplay. Breakthrough MMO technology produces rich animations and hyper-kinetic battle sequences.

- Escape character regret. Reconfigure your character's abilities and performance on demand.

- Communicate with people in and out of the game in real-time using AOL® Instant Messenger™ technology.

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RIP EVEN THE MOST RELUCTANT AUDIO CDS!

The history of audio-CD copy protection is sadder than the sight of a 60-year-old cocktail waitress squeezed into a poly-blend halter top. Celine Dion's *A New Day Has Come* uses Sony's Key2Audio protection, which has been known to crash many PCs. A quick Google search reveals a method of defeating Key2Audio with—get this—a Sharpie. Velvet Revolver's *Contraband* uses protection software from SunnComm, a company that once threatened to sue a Princeton graduate student under the Digital Millennium Copyright Act (DMCA) for revealing that the disc's copy protection could be defeated simply by holding down the Shift key after dropping the disc into the computer's optical drive.

But the latest scheme designed to prevent ripping audio CDs to your hard drive just might be the worst: Macrovision's SafeAudio technology is a misnomer; this copy protection actually works by *damaging* the audio signal. Audio CDs use an error-correction algorithm called Reed-Solomon, which tolerates minor disc errors (such as those resulting from scratches) by "guessing" at the missing data. The technique is effective, but if the algorithm has to guess too many times consecutively, it will introduce distortion and even skips.

Here's how the damage occurs: Macrovision's SafeAudio works by deliberately injecting extremely brief bursts of noise into the data stream. This isn't a major issue when you're playing an audio CD on your PC, because it plays the disc just like any old boom box—it uses Reed-Solomon error-correction. The digital audio-extraction process, however, chokes on this sudden burst of tear gas.

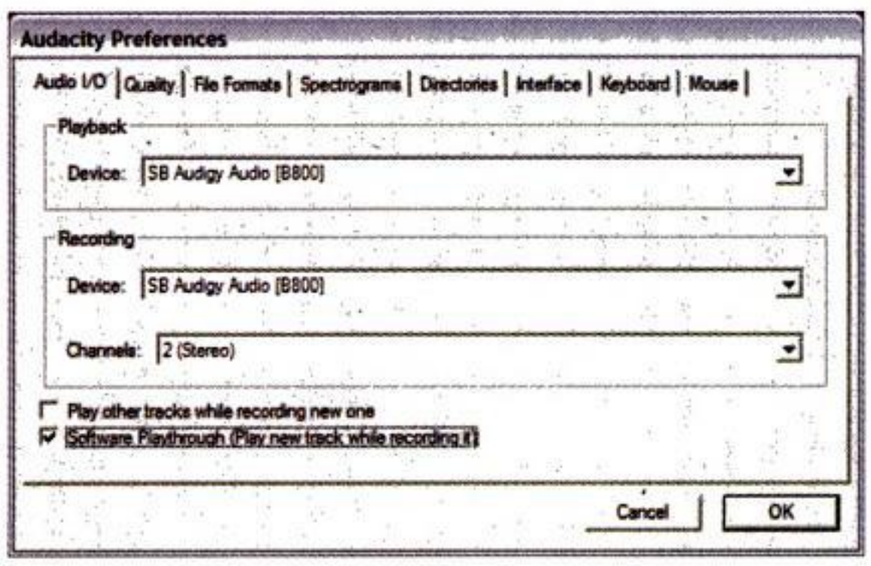
But none of these protections—not even SafeAudio's heavy-handed approach—prevent you from grabbing the audio stream after your soundcard has converted it back into analog waveforms to be sent to your speakers. We'll show you how to do it, and what steps you should take to get the best-quality results. It's time consuming, and may look complicated at first, but it's really a breeze after the first time. And here's a thrilling bonus: If you have a DVD-ROM, this method will also allow you to make an MP3 of the audio from a DVD-Video, so you can listen to *The Big Lebowski* during your morning commute.

And it's all perfectly legal and ethical—provided, of course, you currently own a legitimate copy of the disc.

One Way or Another, We're Going to Get That Music

1 First, download and install the fantastic open-source audio editor *Audacity* from **http://audacity.sourceforge.net/**. Then hop over to **http://mitiok.cjb.net/** and grab the free LAME MP3 encoder as well.

2 Install *Audacity*. Extract the contents of the LAME encoder zip folder you downloaded to a temporary directory. Locate the lame_enc.dll file and move it to the directory in which you installed *Audacity* (this DLL is the only file you'll need from the LAME package, so you can trash the temp folder).

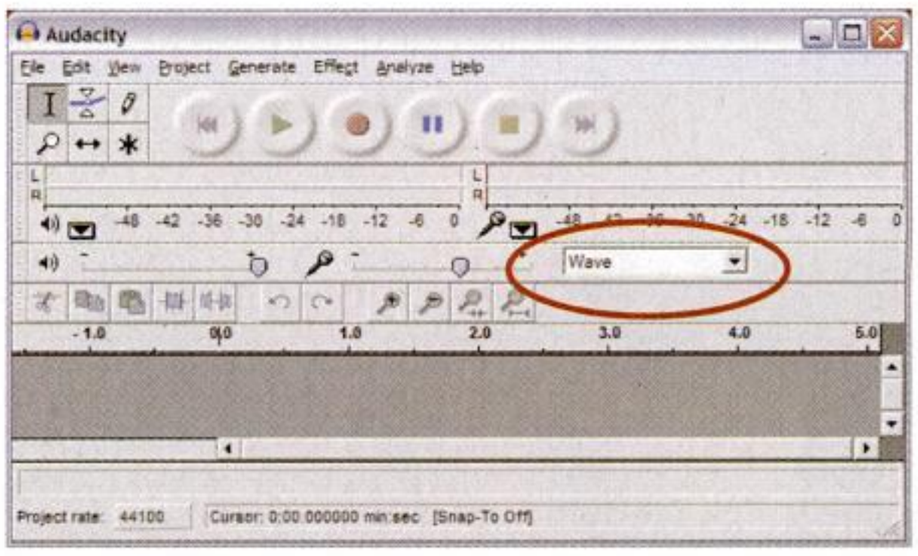


***Audacity* allows you to record audio from even copy-protected CDs using the analog signal from your soundcard.**

3 Launch *Audacity*. Before you begin recording, you need to do some basic configuration tweaks. Go to File > Preferences and click the Audio I/O tab. This is where you tell *Audacity* which hardware to use for playback and recording. We're using our Sound Blaster soundcard to record and play back audio, so we've selected SB Audigy Audio from the drop-down lists under Playback and Recording. From the Channels drop-down list, select 2 (Stereo).

4 Now, click on the File Formats tab. Under MP3 Export Setup, click the Find Library button. Click Yes on the dialog box asking you to locate the LAME encoder, navigate to the *Audacity* directory, select the lame_enc.dll file, and then click Open. Use the Bit Rate drop-down menu to select your bit rate. We recommend selecting a bit rate of at least 192Kbps for music; if you're ripping audio from a DVD that's mostly conversation, you can get away with as little as 64Kbps. Click OK to finish the configuration process.

5 Now we're back in the main application window. Access the drop-down menu circled in the screenshot and select Wave from the list. This tells *Audacity* that you want to record the audio to an uncompressed WAV file.



Select "Wave" to record to an uncompressed WAV file—but be aware that these files are gigantic.

6 Now it's time for a test run. Insert the CD you want to record into your optical drive and launch your media player. If you're familiar with the contents of the disc already, skip ahead to the loudest portion of the CD—this will help you adjust the recording level to minimize distortion (do the same for the loudest portion of the DVD, if that's what you're up to). While the song is playing, click the red Record button at the top of the window (it looks grayed out, but that's just a poor design decision). You should now see red bars indicating that a signal is being recorded. Watch the bars as the track

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plays, and adjust the input volume slider (next to the microphone icon beneath the meter) until the red bars approach the far right edge of the meter ("0") but do not touch it. If the peak level is too high, you'll get distortion. If it's too low, you'll get hiss.

7 If you're not getting a signal, go to the Sound control panel (Start > Control Panel > Sounds and Audio Devices). In the Device Volume panel, click Advanced. You'll see the volume adjustment control panel, where you'll want to make sure the Wave volume slider is at least three quarters of the way up and not muted. If you can hear the CD playback through your speakers, but still aren't getting any signal, go back to the *Audacity* drop-down menu from step 3 and look for an option to record the signal sent directly to the speakers; if you have a Sound Blaster soundcard, that option will be labeled "What U Hear." Be aware that this setting will also record any system sounds (such as mouse clicks), so don't use your PC during the recording process.

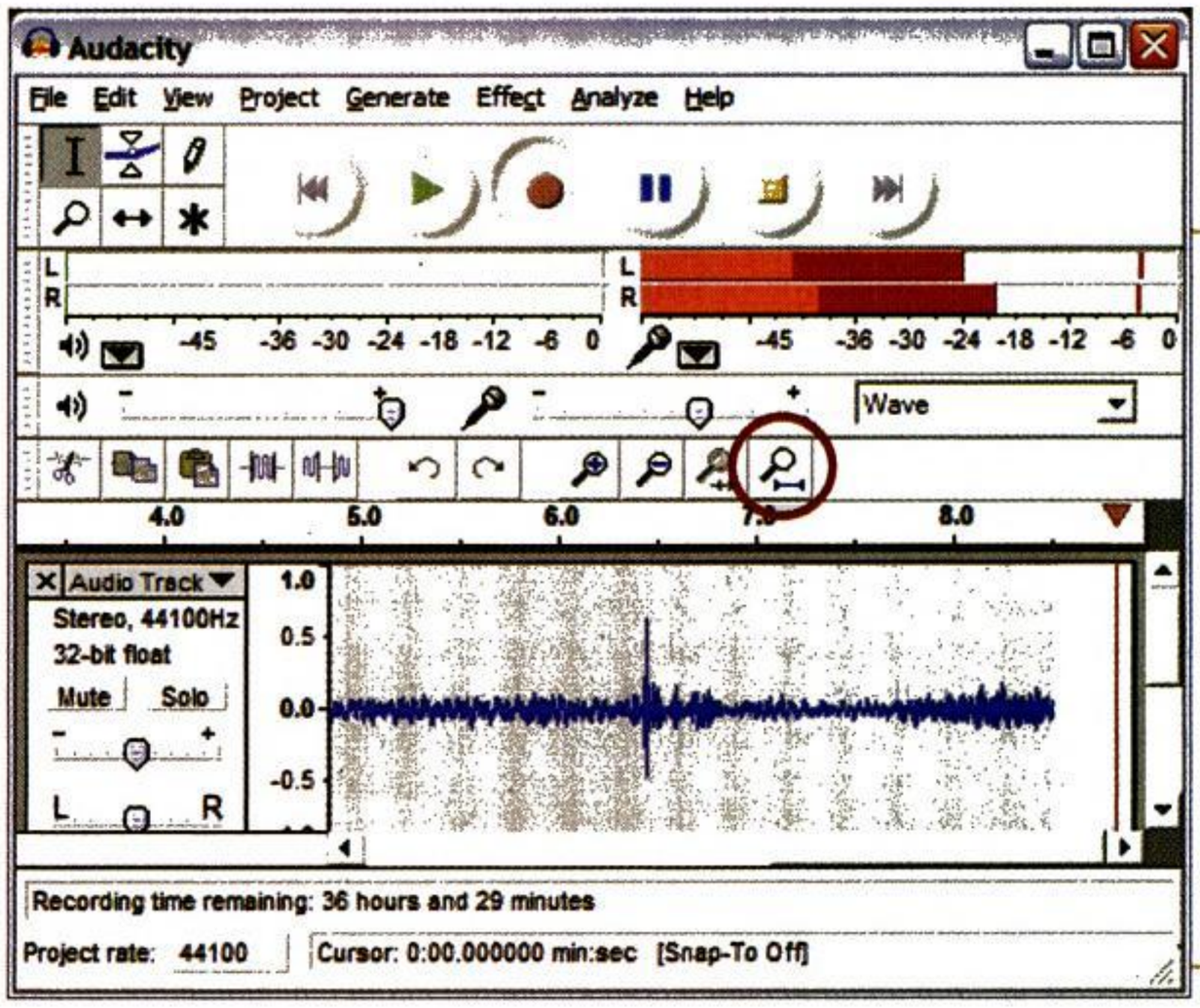
8 Finally, close all applications running in the background, especially those that frequently access the hard drive (that means no file-sharing funny business in the background while recording, OK?).

9 Restart the CD, hit the record button, kick back, and let *Audacity* do its thing. Press the square yellow stop button when the disc is finished.

10 Now it's time to split the single, continuous MP3 file into individual tracks (or chapters, for DVD recordings). First, go to File > Export as WAV, and save the track to whatever directory you prefer. You do *not* want to export the recording to MP3 yet, because you'll end up clipping out portions and having to export them to MP3 again. This will recompress the files and degrade the signal quality.

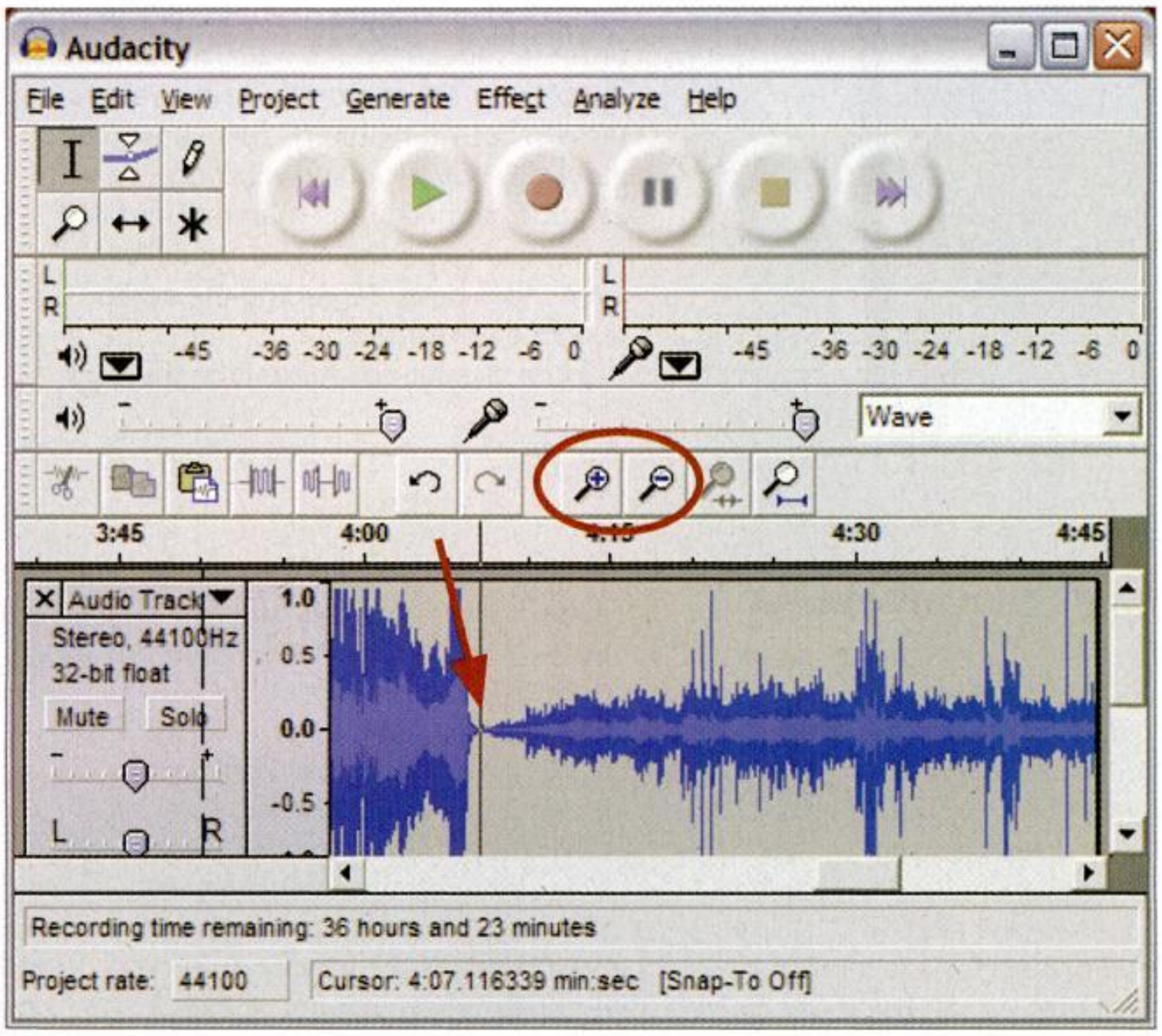
11 Click the Fit Project in Window button (circled). This will place the visual representation of your entire recorded track in the track window. To find the space between tracks, simply scan the track window for areas with little or no signal.

12 When your mouse is in the track window, it turns into an I-beam cursor. Use this cursor to select the portion of the track you want to make a single file of (the easiest method is to place the cursor at the *end* point of your selection, and drag left to the beginning of the file). Select Edit > Cut (or press Ctrl-X) to snip out this portion. Go to File > New, and a new *Audacity* window will open. In the new window, select Edit > Paste (or Ctrl-V).



This button squeezes the entire length of your recording into a single window so you can quickly scan for silence between tracks.

13 Now that we've got the track ready for conversion, simply go to File > Export as MP3. Tell *Audacity* where you want to drop the MP3 and click Save. Next, you'll be offered the opportunity to add ID3 tags. When you click OK, the file will be converted to MP3. Repeat this process for the rest of your tracks. ➔



By using the magnify tool, we can zoom into the track to place our cursor at the end of a track.

PLAY YOUR PURCHASED MUSIC ON ANYTHING

The entertainment industry might recall Napster's heyday with a collective cringe, but the rest of us remember the thrill of grazing in endless pastures of music, and downloading MP3s that played on whatever device we fancied.

Not anymore. Apple's iPod is the only device that supports FairPlay, the proprietary digital-rights management (DRM) scheme employed by Apple's iTunes music store. So if you purchase music from iTunes, you won't be able to play it on any other MP3 player. And if you *do* own an iPod, don't bother shopping at the now-legit Napster, because the iPod doesn't support the DRM scheme that's present in Windows Media Audio files. To make matters worse, there's music that's exclusive to one site or another, and there's *no* digital-audio player that can play music from them all.

Of course, DRM schemes are doomed to be broken. Apple turned a little sour when the *Playfair* utility came to market. *Playfair* converted protected iTunes tracks with the M4P extension into ordinary AAC files, which could be played on any player that supports AAC format. In response, the iTunes DRM was quickly updated to foil *Playfair*. This development led to *Hymn*, yet another DRM "unwrapper." And so on.

Microsoft's own DRM has proven surprisingly sturdy. After a utility called *unf**k.exe* (this is a family magazine, so figure out the missing letters on your own) was released to strip WMA files of their DRM, Microsoft updated its methods, and they hadn't been cracked at press time.

There *is* a work-around that allows you to convert protected tracks to unprotected tracks in any format, and because it doesn't involve decrypting the tracks, it's perfectly legal as long as you don't share them. Virtually all online music-downloading services permit you to burn your purchased tracks to CD a limited number of times. Once you've done so, the tracks can then be extracted by any ripping program, free of their DRM shackles.

But—wouldn't you know it—there's a catch. Audio compression throws out a certain amount of audio data in order to reduce the file size: The lower the bit rate, the more information that's thrown out—never to be recovered. The audio CD you produce will sound only as good as the source material; and if you recompress the tracks, you'll lose even more data, degrading the audio quality even further.

Here are our tips for getting the best quality from the download-burn-and-rip routine:

- If you *must* recompress your tracks, do so at the highest bit rate possible. Of course, high bit rates mean larger files, so you'll need to strike a balance between audio quality and the number of tracks you want to store on your player.
- If you want the absolute best audio quality, encode files using a lossless codec that compresses audio without discarding *any* audio information (usually resulting in a file about half the original size). Your player has to support a lossless codec, of course; the iPod supports Apple's Lossless Encoder, and the Rio Karma supports the open-source FLAC lossless encoder.
- Keep a separate folder of

the tracks you've converted in uncompressed WAV format. This way, if you want to recompress the files using a different codec later, you won't have to waste another one of your burn privileges.

➔

What's PlaysForSure?

The next time you go shopping for an MP3 player, you can expect to get a whiff of assurance from boxes stamped with the PlaysForSure logo. But what exactly does this logo tell you?

The presence of "Windows Media" says it all. The PlaysForSure logo is simply Microsoft's guarantee that any MP3 player that bears this badge will play any track purchased from an online music-downloading service that brandishes the same logo.

By associating MP3 players and music stores that support Windows Media Audio DRM as a family of compatible products, Microsoft intends to challenge the phenomenal success of Apple's iPod/iTunes combo (and you know that success must be driving Microsoft absolutely *nuts*).

See this logo? Any MP3 player that has it won't play your iTunes tracks, so shop carefully.

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ENJOY THE INTERNET CINEPLEX!

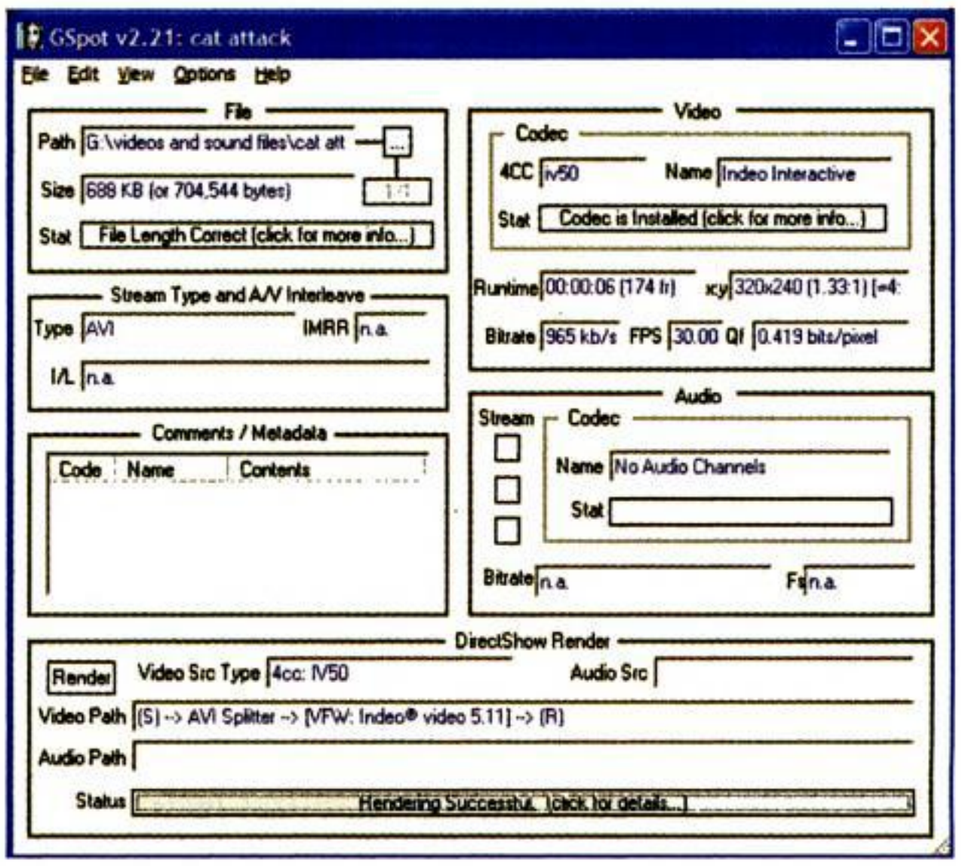
We've all been there. You've excitedly downloaded an unknown video referred to as "OMG—teh funniest video evar!" from a message board, only to discover that the video won't play. Maybe you can hear it, but there's no video; or maybe it just won't play at all. As connoisseurs of quality Internet video ourselves, we understand how frustrating this situation can be. We're here to make sure it never happens to you.

Tools of the File Trade

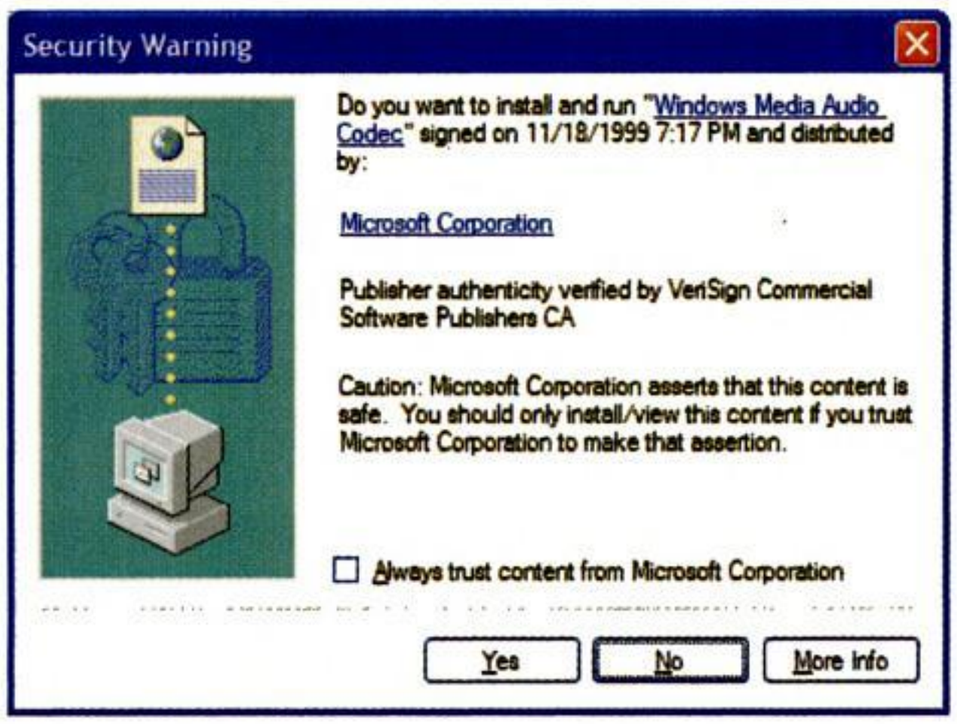
That clip you downloaded of some skateboarding dumbass's spectacular encounter with pavement has had its contents compressed with one or more of a staggering number of available codecs (compressor/decompressor). In order to watch it, you'll need the appropriate codecs installed on your PC. But which ones will you need?

Sometimes, the file extension will reveal the answer. WMV files, for instance, use Microsoft's Windows Media codec; naturally, these files are playable in *Windows Media Player* (although you might need to update *WMP* to the latest version).

Most of the time, however, you'll have no clue as to which codecs you'll need. One option is to download a codec pack—a comprehensive collection of the latest versions of every codec that whoever compiled the pack was able to dig up. Google "codec pack" and you might be tempted to download one of many codec packs. But we don't recommend it. Most codec packs have their own installers, and this should give you pause—*you have no idea what that executable could do to your PC.* That convenient codec pack might also be throwing in a keystroke logger, a virus, or enough spyware to transform your 3GHz P4 into the performance equivalent of a Mac Classic. Avoid the temptation.



If a video won't play properly, run it through G-Spot to discover what codecs you need. The "codec is installed" message in the upper right-hand corner tells us we're in like Flynn for this particular video.


Security Warning
Do you want to install and run "Windows Media Audio Codec" signed on 11/18/1999 7:17 PM and distributed by:
Microsoft Corporation
Publisher authenticity verified by VeriSign Commercial Software Publishers CA
Caution: Microsoft Corporation asserts that this content is safe. You should only install/view this content if you trust Microsoft Corporation to make that assertion.
Always trust content from Microsoft Corporation
Yes
No
More Info

You can download some codecs directly through Windows Media Player, but click "Yes" only if you entirely trust the company sending the codec.

Instead, mosey over to **www.headbands.com/gspot/** and download the *G-Spot Codec Information Appliance* (no snickering). Despite its wonky name, it's absolutely essential for serious video grazers. Install and launch the application, and wait just a few moments for it to scan your PC for installed codecs.

After that, all you need to do is drag the mystery video into the Path box at the upper left corner. The required video codec will be reported in the Name box of the Video section. Just beneath that, the Audio section will report the necessary audio codec (if the clip includes sound). The gray Stat boxes in each window will even tell you whether or not you have the necessary codecs installed.

Software Disobedience

Remember that clunky gray box called *Windows Media Player* from a few years ago? Well, it's back and taking on a new life—a life of crime. It's been resurrected—in a manner of speaking—in the form of an application known as *Media Player Classic* (Google the term, as updates are moving targets). *Media Player Classic* became popular as a result of two programs floating around the net—*QuickTime Alternative* and *Real Alternative*. These executable files install the codecs necessary to play QuickTime and RealMedia files from within *Media Player Classic*.

The attraction is obvious: No more hand-to-hand combat trying to keep QuickTime out of your system tray, and RealPlayer... well, why? But we don't need legal counsel to figure out that both of these "alternative" codec installers likely infringe on Apple's and Real Audio's intellectual-property rights. And, once again, are you sure you know what's in that executable?

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The Celebrity Codec Roundup

There are a number of codecs we think everyone should have. Grab these, and chances are slim you'll ever face a blank screen instead of your downloaded... well, don't ask, don't tell!

Divx: Once a hacked version of Microsoft's proprietary MPEG-4 V3 codec, it was developed from scratch at version 4 and is now owned and distributed by DivxNetworks. It's the most popular codec based on the MPEG-4 spec, but losing ground to Xvid and Windows Media. Still, this is a must have. Files encoded with Divx can have the extension of AVI or MPG. It's now at version 5.2.1, and a free version is available at **www.divx.com/divx/download/.**

Xvid: Xvid is an open-source alternative to Divx and is kind of like Divx' evil twin. Like Divx, it's based on the MPEG-4 spec, and files encoded with it will have either the AVI or MPG extension. Source code and information about the project is located at **www.xvid.org**, but what you can get the compiled binaries by downloading the strange-sounding file Koepi's Binary at **www.divx-digest.com/software/xvid.html.**

Windows Media Video 9 series: Microsoft's home-brewed codec is a winner. File sizes tend to be somewhat smaller than Divx or Xvid results, and it's very fast. Windows Media 10 files have the WMV extension. If you have the latest version of Microsoft's *Windows Media Player* (version 10), you already have this one installed. If not, open *Internet Explorer* and run Windows Update.

RealMedia: Although not one of the most popular codecs, RealMedia files are common enough to make downloading the free version of RealPlayer worth the effort of finding it on Real's web site at **www.real.com.** RealMedia files have the .RM or .RAM extension.

QuickTime: Apple's proprietary codec has seen its popularity plummet in the last couple of years, but QuickTime is still employed as a streaming-media format, and for whatever reason, the majority of movie trailers still use it.

Bypass the annoying "connecting to codec server" screen by making sure you have all the necessary codecs installed on your PC. This will save you time and frustration.

Files using this codec have either the .MOV or .QT extension. You'll find the free version of the player at **www.quicktime.com.**

AC3 filter: Many video files on the Internet are encoded with AC3 (Dolby Digital) sound, so grab the AC3 filter at **http://ac3filter.sourceforge.net/.**

Vobsub: If your video clip has people making strange, exotic noises, it might be in a foreign language. That's why some of them come with subtitle files (usually in SRT format). Installing VobSub will allow media players that support these formats, such as *Media Player Classic* and *BSPlayer* **(www.bsplayer.org).** ■

RESOURCES

Earn your BA in MPEG-4 with these helpful and chatty web sites

www.videohelp.com
Indisputably the most comprehensive web resource for information, tutorials, and software for converting video from any source into, well, whatever it's possible to convert it to. The catch? The site's design is hideous.

www.doom9.org
Although somewhat less voluminous than Videohelp.com, it's much easier on the eyes. You'll find extremely detailed guides here on ripping, converting, and encoding, as well as helpful tutorials dealing with subtitles and audio processing.

www.hydrogenaudio.com
The Betties and Bobbies over at Hydrogen Audio are the fussiest audiophiles on the planet, and the forums are practically hemorrhaging with the most-up-to-date chat on audio-compression codecs, encoding techniques, lossless encoder formats, and even MPEG-4 video-compression advice.

www.dvddemystified.com/dvdfaq.html
Curious about CSS encryption? Want to know the difference between closed captions and subtitles? Desperate for trivia to alienate potential soul mates at cocktail parties? The DVD FAQ is an all-you-can-eat buffet of information on DVD discs, formats, and players.

www.eff.org
Even if you haven't received a subpoena from the MPAA or the RIAA, every geek ought to troll the Electronic Frontier Foundation's web site at least monthly. Here's where you'll find the latest information on technology legislation while you can still do something about it: *before* it becomes law. Better yet, be a champ and donate your pocket change to the organization that successfully defended *Grokster*, Dmitry Sklyarov, and someday, maybe *you*.

www.microsoft.com/windows/windowsmedia/9series/encoder/default.aspx
Sliced bread is good. Windows Media Encoder 9 series is better. Hey, we're always game to humiliate the Beast of Redmond for its many foibles, but Microsoft's home-brew codec is fast, easy to use, and the results are stunning.

INTERNET 2:

SON OF INTERNET

Everything you know about the Internet is about to change. Meet the Grid.

BY LUIS VILLAZON

The Internet is full. Full of hackers, spam, weblogs, *Counter-Strike* fraggers, pirated MP3s, streaming porn, eBay bargains, IM chat and, voice over IP. When we were struggling with our dial-up modems just a few short years ago, all we could think about was finding a way to increase the bandwidth of our own connection to the Internet.

Now that more and more of the world has broadband (60 percent of users in the U.S. have it), we're beginning to realize that it's a bit like driving a McLaren F1 in a crowded parking lot: Theoretical top speed is meaningless when the rest of the traffic is gridlocked. What we need to do is upgrade the Internet itself, not just our connection to it. In other words, we need some serious lane widening.

Fortunately, a cabal of not-so-mad scientists is hard at work developing a new infrastructure that will make the current Internet seem like a back-country hiking trail! Dull technology journalists have taken to dubbing this effort "Internet Mark II," but the pocket-protector set behind it have done a somewhat snappier job naming their project. Known as National LambdaRail (**www.nlr.net**), this super Internet is a 10,000-mile-long series of high-speed links that stretch around the U.S. in a big ring with a couple of crossbars running north-south (squint your eyes and it

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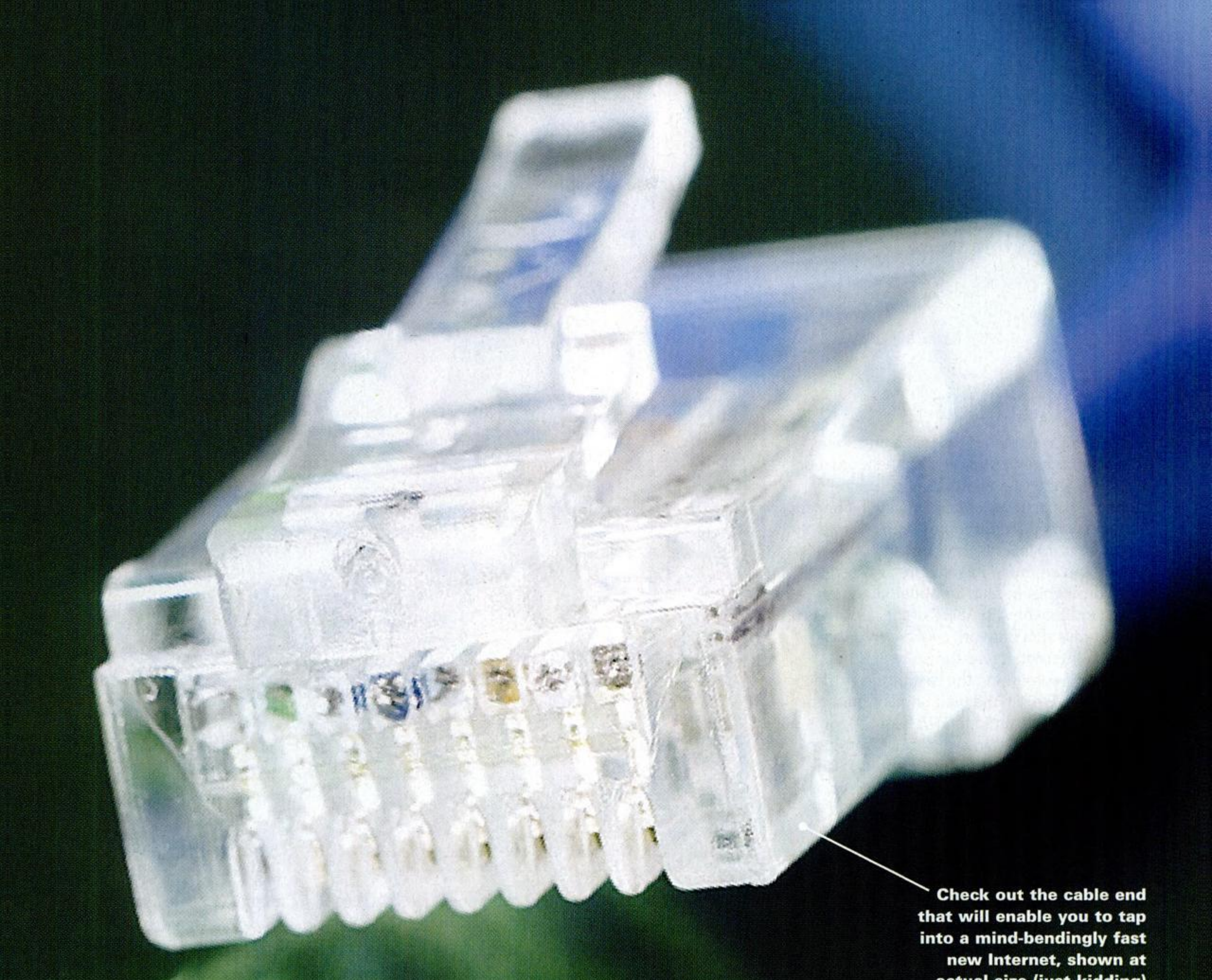

Check out the cable end that will enable you to tap into a mind-bendingly fast new Internet, shown at actual size (just kidding)

looks a bit like a giant belt buckle). Each link is made up of a pair of humongous fiber-optic cables that use Dense Wave Division Multiplexing (DWDM) to support a total of 40 simultaneous channels using different wavelengths. DWDM sounds intense, but the concept is pretty simple to understand. Just like a prism breaks up "white" sunlight into a spectrum of colors, wave-division multiplexing breaks up light traveling through a fiber-optic cable into separate wavelengths. Each wavelength can act as a separate network channel, hosing data through the pipe at a sweaty-palmed 10Gb/s. That's about 250 times faster than most Internet service providers can currently manage, and it's 6,000 times faster than that ADSL link you're so proud of.

With 40 channels to play with, National LambdaRail is able to host several different networking experiments simultaneously. Some researchers are looking at technologies to increase the Internet protocol address space (see the sidebar on IPv6 on page 42); others are looking at ways to improve the reliability of the Internet packet delivery (called Quality of Service, or QOS) so it can be used for time-sensitive applications such as streaming video. One of the projects even treats the entire LambdaRail as a local-area network. It actually uses Ethernet protocols over a network that's 3,000 miles from end to end. Imagine a network where you could run *Word* in New York, but save your documents on a file server in L.A. Or switch on a diskless workstation in Houston and boot it with an OS loaded directly from Microsoft in Seattle.

At the moment, LambdaRail is kept separate from the Internet. That's because global commerce is now so dependent on the Internet that scientists dare not muck about with it in case they cause a major outage and find a caravan of lawyers camping out on the front lawn. LambdaRail gives them a safe test-bed where they can try out new technologies, but one that's also big enough to enable realistic experiments. The idea is that as the individual proof-of-concept networks running over the LambdaRail become more stable, they can quickly be deployed as usable tools. All the nodes on LamdaRail are U.S. universities and corporations, and there are plenty of high-performance research projects out there that can benefit from the ability to shift around gigantic amounts of data quickly. Remember that all the networks on LambdaRail cover the same geographical territory (at least potentially—some of them have servers at only a few of the available LambdaRail nodes). What distinguishes these networks is the protocol used to move the data.

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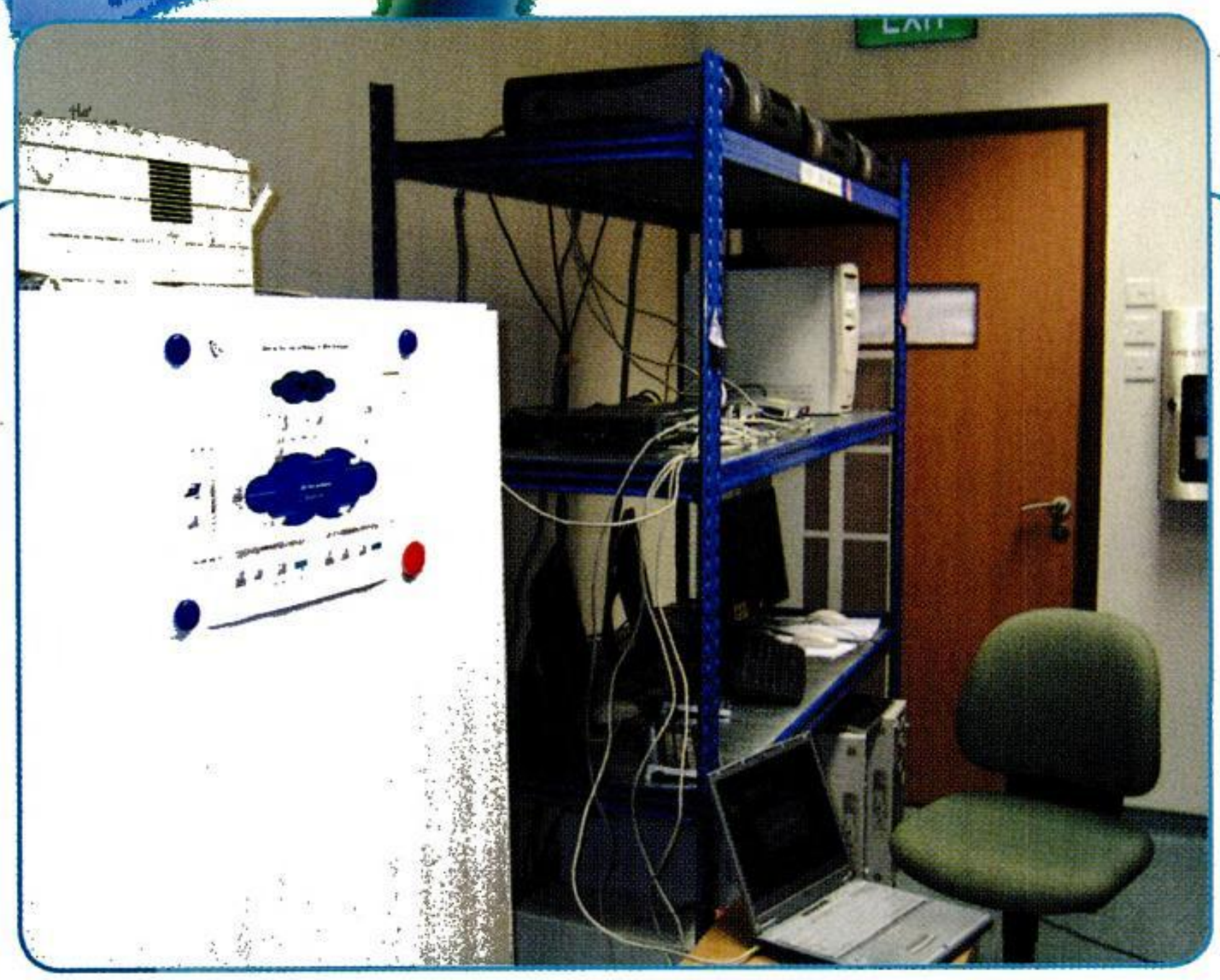

THE CONCEPTION

It's easy to fixate on the wires and switches that make up the physical network, and lose sight of the fact that all computer networks actually consist of seven conceptual layers piled on top of each other. Only the bottom layer is physical, the other six are implemented in software as a series of protocols. In fact, LambdaRail today resembles the ARPANET of the 1960s. As that research network evolved into the early Internet, it was the software that made it something the rest of the world needed. E-mail, the web, instant messaging, FTP, RealAudio, and Valve's Steam distribution system are all built from protocols running on protocols running on protocols running on the actual wires.

SPAN AND SEED

The physical scale and capacity of LambdaRail is undoubtedly an impressive bit of engineering, but by itself, all that fiber-optic cable won't solve the current problems of the Internet. If every copper telephone wire and CAT5 Ethernet cable were replaced with 40-wavelength fiber, we still wouldn't have the "Internet Mark II." The move to a fully fiber-based Internet backbone is just the next step on that long road called progress. After all, there are really only two performance metrics for communications hardware: span and speed. Once your network covers the globe, all that's left is to make it faster.

The real potential for innovation lies not with the network, but with what you use it for. In 1989, the Internet was just e-mail plus a dorky collection of text-based cataloging systems. Once Tim Berners-Lee invented the World Wide Web, even those without goatees could see the point of the Internet. The web came to dominate the net because it created a democratic, flexible, and scalable way of sharing information. Before the web, it was relatively easy for individuals to access information held in large, centralized repositories such as university libraries, but very difficult for each user to make information of his own available to the rest of the world.

So if LambdaRail is just the replacement wiring, what is the next concept as revolutionary as the web? We'll tell you: It's called the Grid. This is a conceptual shift as radical and as subtle as the web was in its day. Just as the web is the Internet to most people, so the Grid will be.

The Grid is a way of connecting computers so they don't just share data, but also processing power. It's a bit like

WHAT IS IPV6?

What happens when we run out of Internet addresses?

We're accustomed to the convenience of reaching web sites by typing in descriptive addresses such as www.maximumpc.com. But all devices on the Internet, be they web sites, individual PCs, game servers, or whatever, are actually identified by their IP address, which is a 32-bit number in the form of "xxx.xxx.xxx.xxx." This convention was defined by version 4 of the Internet protocol more than 20 years ago, and it can theoretically address 4 billion different nodes. This probably seemed like plenty at the time, but that IP address space is nearly all used up today, and the network address translation (NAT) used by routers to get around the problem makes network routing much harder than it needs to be.

The answer is IPv6 (IPv5 was an attempt to enable real-time streaming and never caught on). Version 6 addresses use 128-bit numbers, enough for a billion separate addresses for every bacterium on Earth. Even if everyone on Earth was allocated a new, disposable IP address for every second of their life, you wouldn't run out in the lifetime of the universe. IPv6 also enables easier routing, better security, and seamless transition from IPv4. The first IPv6 networks are just starting to appear now.

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peer-to-peer networking, a bit like cluster computing, and also a bit like those baffling business middleware technologies like CORBA and DCE. In reality, though, the Grid is so much more than all of these ever can be.

Like all the best ideas, it's simple enough. If you want electricity, you plug into a power outlet; if you want computing power, you plug into the Grid. Think SETI@home, the alien-hunting project that uses the combined processing power of tens of thousands of PCs from across the world to analyze the reams of data gleaned from scanning space for communication. It's a bit like that. But compared with the Grid, SETI@home is like playing *Counter-Strike* by e-mail.

On the geek news site Slashdot.org, the perennial joke whenever a faster computer arrives is "imagine a Beowulf cluster of" whatever had been the fastest PC before it. But Beowulf clusters require identical computers to be wired together using very low-latency networks with all the machines in the same building. The Grid enables computers with different hardware architectures, specifications, and operating systems to share resources, using network connections of different lengths and speeds and over much greater distances. Each Grid node can provide data storage, processing power, or both. The load is distributed among nodes by a centralized server, but the results of the application can be shared by all nodes, or just one. If all that sounds a bit woolly, imagine this: When you start a game (*Half-Life 4*, say), instead of running the graphics engine entirely on your own PC, the Grid-enabled program spreads the workload evenly among everyone else with the game. Fast PCs thus help those with slower machines, PCs in quiet sections of the game help those rendering busy fire fights, and PCs left idle help everyone. Provided there is some incentive scheme that factors the amount contributed to the rendering pool by each PC into, say, a monthly subscription fee paid by each participant, the result is higher frame rates and more realistic graphics for everyone. And all at a fraction of the cost of upgrading your own hardware when you need to.

10 WAYS...

THE GRID WILL CHANGE YOUR LIFE

1. Online retailers will spend less on IT, so prices will be lower.
2. New cars, airplanes, and drugs will be cheaper to produce.
3. Weather forecasting and climate modeling will be more accurate.
4. Your ISP will automatically back up your data for you.
5. You won't pay for Internet access by the month or by the byte but by the instruction.
6. Your network card will have a bigger effect on performance than your CPU.
7. You'll be able to upgrade your PC simply by renting more power.
8. Your mobile phone will be able to remotely access the power of your desktop.
9. Your desktop will be able to access the power of a supercomputer.
10. You won't really need a laptop for mobile computing anymore.

THE GRID WON'T CHANGE YOUR LIFE

1. Connecting to the Grid will still be the most complicated thing you do with your PC.
2. Doing it wirelessly will still be harder and less reliable than being wired.
3. Spammers will still waste bandwidth trying to sell you stuff you don't need.
4. Most of those items will still involve naked women.
5. There will still be a box with a keyboard, mouse, and monitor (we call it a computer), sitting on your desk.
6. We will continue to need a CPU to run the OS, as well as some local storage.
7. You'll never have enough RAM.
8. It still won't seem fast enough.
9. Microsoft will always find a way to make money from it.
10. Something even better will replace it one day.

ECONOMY OF SCALE

It may sound familiar, but this isn't just another peer-to-peer scheme. Again, consider the parallels with electricity generation. It is perfectly possible for anyone to generate their own electricity and sell any surplus back to the national grid, but most of us are purely consumers. It's cheaper to generate electricity in a few centralized locations and distribute it to everyone. More than just the economies of scale, such a system helps to even out peaks and troughs of demand, so you need a smaller margin of overcapacity. Werner Ederer, IBM's Program Manager for Grid and e-Utility Computing, claims that most of our computing power is currently wasted. "Take any medium-size organization—a finance company, a radio station, a mail order house," says Ederer; "they all have their own IT infrastructure and because their load distribution is not predictable, they have to keep up to 40 times more computing power than they need."

The Grid, per se, doesn't actually exist yet. All we have is "grid computing" with individual organizations setting up their own localized grids. Some of these setups are pretty big, though. IBM is building one in China that will eventually link 200,000 students and researchers at nearly 100 universities across the country. When phase one of this project is completed in mid-

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THE JARGON

The concepts behind National LambdaRail and grid computing, naturally, come with their own baffling array of technical jargon. Here's a breakdown of the most important terms to know as we trot toward the future of the Internet.

BEST EFFORT The scheduling algorithm used by the Internet today. All packets are (mis)treated with equal priority.

GIGE (GIGABIT ETHERNET) An Ethernet version with a speed of 1Gb/s. The most advanced version of Ethernet to date is 10GigE.

INTERNET2 Trademarked name for a U.S. university and corporate project to develop advanced network applications. The reason why everyone else has to refer to the "Internet Mark II" to describe the future Internet, instead. [*Let them try and sue this article's title – Ed*]

KERBEROS A network authentication mechanism that uses a central secret-key repository, making it useless for general Internet use.

LATENCY How long it takes a packet to travel from its source to its destination. Also called delay, lag, and "I thought this was supposed to be broadband."

MIDDLEWARE The layer of software between the network and the applications, defined as "the intersection of what network designers and application developers each do not want to do."

PKI (PUBLIC KEY INFRASTRUCTURE) A much more secure network-authentication mechanism than Kerberos, but tragically too complicated to implement.

QOS (QUALITY OF SERVICE) A methodology used by Internet routers to prioritize data traffic. Time-critical traffic (think voice-over-IP calls, or data exchanged between a game server and a client) is sent first, while lower-priority traffic (such as simple file transfers and DNS requests) is sent afterward.

2005, the grid will be capable of six teraflops (trillions of operations per second). This will eventually rise to 15 teraflops, equivalent to eight times the power of the ASCI Red supercomputer at Sandia National Laboratories. The China grid enables each university to specialize its research in one area of computer number-crunching—climate modeling, say, or fluid dynamics—while at the same time giving students access to the computing resources of all the other specialist universities. This isn't just an efficient way to deploy hardware, it's an efficient use of human scientist "wetware" too.

Fluid dynamics is such a preposterously complicated issue that it seems to appear on the list of uses for virtually every supercomputing technology. Companies like Boeing and the Airbus consortium are accustomed to building massive computing clusters to run their virtual wind-tunnel models; frankly, they can probably afford to maintain their own systems like this. But just as the web has democratized information, the Grid will bring computing power to the little man. This means smaller companies and smaller nations won't always need to band together into paralyzing consortia in order to tackle major engineering projects.

We're still a long way from a Global Grid—it took the web 10 years to move from invention to ubiquity—but grid computing has unstoppable momentum already. We all know about Moore's Law, which posits that the number of transistors that can be fabricated on a single integrated circuit doubles every 18 months, but network capacity has been doubling more than twice as fast over the same period. Grid computing provides a way to harness this power. In the home, we can expect projects like SETI@home and Folding@home to be followed by projects deployed through web services, without the need to download a separate client. Next will come integrated operating system support, possibly within three years. After that, the desktop portion of your operating system and application programs will begin to shrink as more of the load is carried by the emerging Grid.

In the next 10 years, we might well have transitioned to a world where home computers are stateless machines that boot from ROM and execute all application-level software via a global Grid system that remotely supplies data to our system faster than the processor can pump data over the AGP bus today. When that happens, we will ask ourselves, "Where did all the data come from before we had the Grid?" ■

Oh, that's so much clearer now...

"The essence of grid computing lies in the efficient and optimal utilization of a wide range of heterogeneous, loosely coupled resources in an organization tied to sophisticated workload management capabilities or information virtualization."

—MATT HAYNOS, Program Director of Grid Marketing and Strategy at IBM, explaining the Grid in layman's terms.

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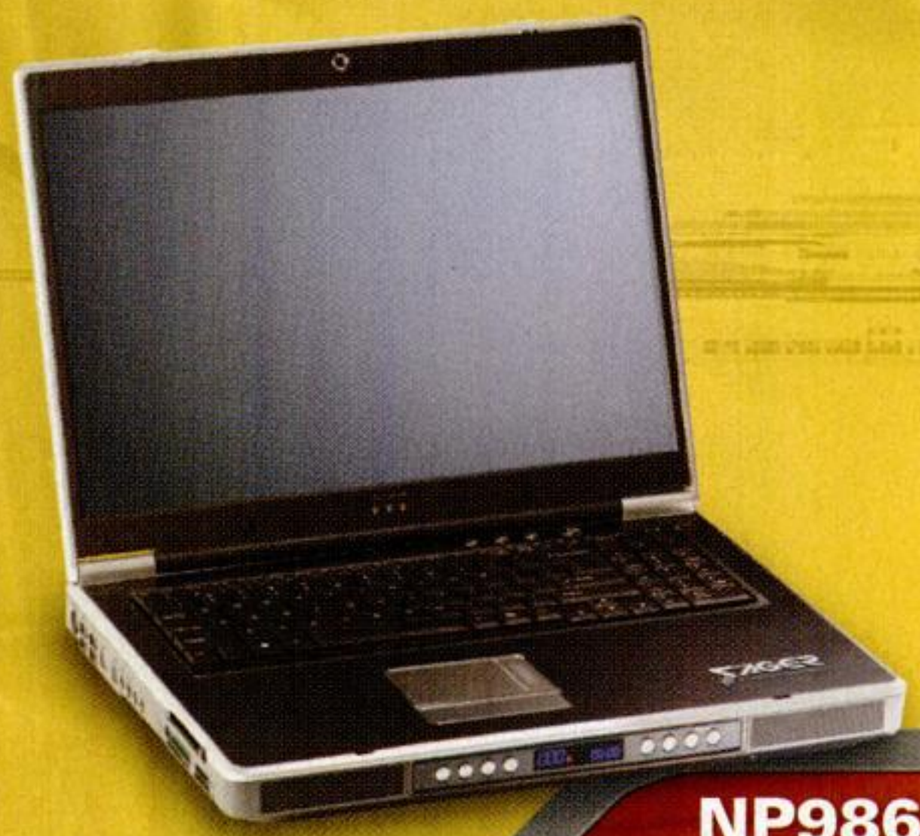

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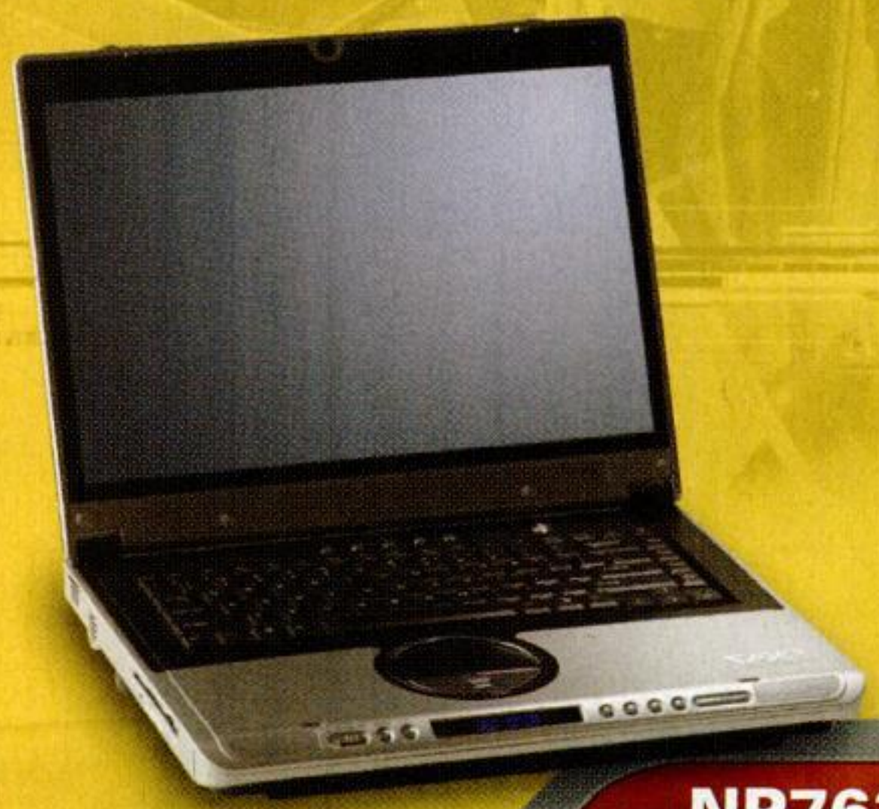

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- Dual Channel DDR2 System Memory supports 400/533MHz, provides the best match for Intel® Processors and enables power efficiencies for data intensive business, multimedia, and gaming applications.
- ATI MOBILITY™ RADEON® X800 PCI-Express™ Graphics Module with 256MB DDR3 Memory delivers true-to-life graphics at blazing speeds.
- The front panel Audio DJ CD player control with separate power switch lets you play your favorite music CD or MP3 while on the go.
- Dual Optical Device bays and Dual Hard Disk Capability allow this system to be customized with 2 CD-ROM devices and 2 Hard Drives coexisting for maximum storage capacity.

OPTIONS

- 802.11g Wireless Module
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- TV Tuner with Remote

- 17.0" Wide Viewing Angles WSXGA+ Active Matrix Display with Super Clear Glare Type Screen
- Intel® Pentium®4 Processor 560 with HT Technology (3.6GHz, 1MB L2 Cache, 800MHz FSB)
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- Full Size Keyboard with Numeric Keypad
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- Built-In Digital Video Camera
- Built-In 7-in-1 Card Reader
- 4 Built-In Speakers with a Subwoofer
- External USB 1.44MB Floppy Disk Drive
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- Microsoft® Windows® XP Home Edition
- Sager's Umbrella Protection Policy

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FEATURES

- ATI MOBILITY™ RADEON® X800 PCI-Express™ Graphics Module with 256MB DDR3 Memory delivers true-to-life graphics at blazing speeds.
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- Bluetooth Module
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- Front Panel Audio DJ with Separate Power Switch
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- Built-In 3-in-1 Card Reader
- 6 Built-In Speakers
- Virtual 8 Channel External Speaker Output
- 3.5" Removable 1.44MB FDD Exchangeable with Optional 2nd Battery/CD-RW/DVD/ HDD Drive/7-in-1 Card Reader
- 3D Enhanced Sound (SPDIF 7.1CH Output for DVD)
- Microsoft® Windows® XP Home Edition
- Sager's Umbrella Protection Policy

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Paint Your Case Like a Pro

Step-by-step instructions to make your basic enclosure look badass

BY PAUL CAPELLO

When you must have a hot-rod-quality paint finish on your PC, there are two roads you can take: handing your case over to a professional or rolling up your sleeves and taking on the challenge yourself. A growing number of crossover craftspeople have brought their skill and experience with automotive and motorcycle paint finishing to the world of case modding. As a result, you can ship your case to them and, for a fee, have it shipped back to you with a high-quality custom-paint finish, airbrushed graphics, logos, or any design you can imagine. These skilled artists have the experience and the equipment to create the most stunning paint finish your case will ever have, and with that comes a hefty price tag. It's not uncommon to find prices from a few hundred dollars to more than a $1,000, depending on the design and complexity of the project.

If you don't have the bucks to spend on a custom paint job or a "friend in the business" with the free time and equipment to help with your project, you can get a very respectable finish on your case (and keyboard, monitor, mouse, and so forth) with about $25, some elbow grease, and the patience of a saint. More than a few modders on the scene are masters of the spray-can paint finish, and there's no reason you can't achieve the same expert results with lots of practice, some common sense, and a helpful guide to point you in the right direction. I have no doubt that after you do the first paint job right, you'll be addicted and will strive to make the next one even better. Secrets to great paint finishes are locked away in those hardware store rattle cans, and if you're unfamiliar with the techniques in this article, you're in for a surprise.

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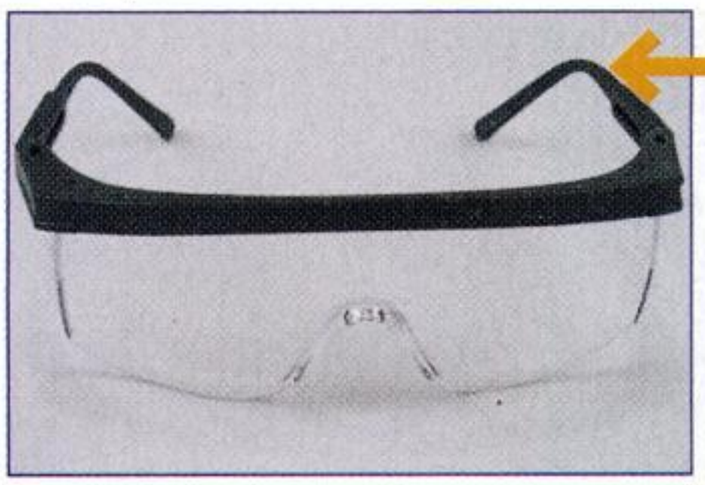
Before you get started: Safety Precautions

These safety items should be worn when using spray paints or an airbrush. Don't even think about painting without them.

RESPIRATOR

Spray enamels, lacquers, oils, and alkyds are manufactured from extremely poisonous materials that must be used in areas with adequate ventilation while wearing a properly fitted National Institute for Occupational Safety and Health (NIOSH)-approved paint respirator. Read the warning label on the can. Seriously. Read it, and follow the instructions.

This should go without saying, but before you go and ruin your favorite Moby shirt or low-rider jeans, make sure you wear clothes and shoes you don't care about. If you're painting outdoors—and we wholeheartedly recommend it—mild breezes can cause paint overspray to wash back over your clothing. You might also want to consider wearing a hat, lest you end up with a blue-metal-flake 'do.



SAFETY GLASSES

Common prescription eyewear (unless safety-rated) should not be used as an alternative to proper protection. Good safety glasses are inexpensive and easy to find, and usually fit over existing eyewear. You should wear your eye protection when painting, cutting, grinding, sanding, polishing, and using any type of powered machinery. Safety glasses inevitably get scratched, so replace them immediately or use a plastic polish such as Novus to buff out the scratches. Never attempt to clean your safety glasses with solvents. Using badly scratched or damaged eyewear is equivalent to using nothing at all, and it can result in serious injuries. Protective eyewear should be Occupational Safety and Health Administration (OSHA)-certified.

GLOVES

You should use latex rubber or silicon examination-type gloves when working with acrylic paints and other noncorrosive materials. Keep in mind that some people are allergic to latex and can have adverse skin reactions. Chemical-resistant gloves must be worn when using resins, epoxy adhesives, acid, and other harmful chemicals.

Tools and Materials

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About the Materials

PAINTS

The best aerosol paints for getting a good finish on your case are enamels and lacquers. Both are formulated for the best possible adhesion on metal, wood, plastic, and previously finished surfaces. Enamels are the most common and come in a wide range of colors. Generally, they are more easily wet-sanded, are durable, and shine up pretty well. The downside to enamels can be the drying time—up to twice as long as lacquer-based paint. Lacquers give you the best aerosol-can shine you can get and have good durability; for the beginner, this is an excellent choice. Brands such as Plasti-Kote and Dupli-Color are popular and come in many automotive-flavored and matched colors. When selecting a brand, you should also purchase the suggested primer and clear topcoat to ensure the best compatibility and save the time of having to do a test piece. Lacquer applied over some enamels becomes an effective paint stripper and can basically ruin your day. Your best bet is to read the labels carefully.

The first and most crucial coat of paint is the primer. Whichever brand you choose, make sure it is wet-sandable (or even dry-sandable, for that matter) by carefully reading the label; if it's not stated right on the front of the can, then generally it is not wet-sandable. *Wet-sanding with an incompatible primer results in peeling, lifting, cursing, redness of the face, and sometimes tantrums.* My personal favorites are Krylon wet-sandable black and ruddy brown primer; for light-colored paints, I use the brand's gray or white primer.

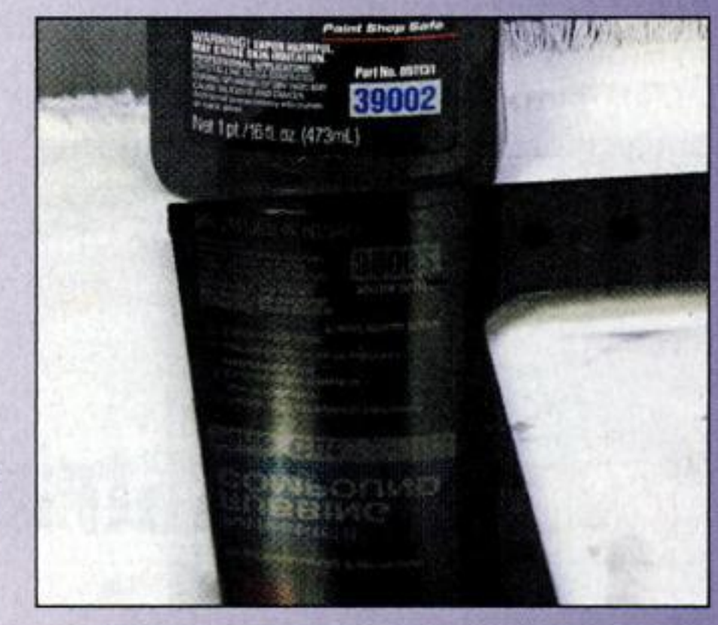
For painting parts such as bezels, CD-ROM faceplates, and other plastic parts of your case, you can use the same materials and methods we discuss later. There are also specialty products you might like to experiment with, such as the Plasti-Kote automotive vinyl dyes and Krylon Fusion brand paint. The vinyl dyes from Plasti-Kote are sold in aerosol cans and are applied much the same way as your basic spray paints. The consistency is more akin to a plastic "stain." Krylon Fusion paints are said to bond to plastic on a molecular level, creating a durable and scratch-resistant finish on hard-to-paint plastic surfaces. The drawback of plastic paints and dyes is the limited colors available, but if they happen to fit your color scheme, give them a try.

WET/DRY SANDPAPER AND SANDING BLOCK

A block of rubber and a few sheets of wet and dry sandpaper are your most important tools for creating a show-car-quality finish on your PC case. You can find these at just about any hardware or automotive supply store. A favorite in the automotive restoration business is 3M and its Imperial brand of silicon carbide papers. Good-quality sandpapers have fast cutting properties and a tendency to last a bit longer before clogging up with paint residue and requiring replacement. Wet and dry sandpapers for paint finishing also have a weight specification: A is a light paper, and B is slightly heavier. For this project, we use A-weight papers from 600-grit to 2,000-grit.

RUBBING COMPOUND AND POLISHING GLAZE

After your painted case parts are made as smooth as possible with 2,000-grit paper, a liquid rubbing compound and polishing glaze are used to create a wet-look mirror finish. Rubbing compound is a liquid that contains fine abrasives and removes the fine scratches, swirl marks, and imperfections left behind by the 2,000-grit sandpaper. Your best bet is to get the type that can be used by hand because some are formulated for use only with high-speed buffing machines. Hand glaze is another liquid that is applied after the rubbing compound and contains no abrasives, but rather special polishing agents that create the final shine. For these final steps, be sure to have plenty of clean, lint-free cotton cloths on hand—you should get yourself one of those "big bags-o'-rags" at the hardware store. For this paint job, I use 3M Perfect-It 2 fine-cut rubbing compound and 3M's Imperial Hand Glaze.



DENATURED ALCOHOL

After you've stripped any factory paint from your case and sanded it silky smooth, you should clean up the case with denatured alcohol before you begin painting. Remember, hand, eye, and lung protection is a must.

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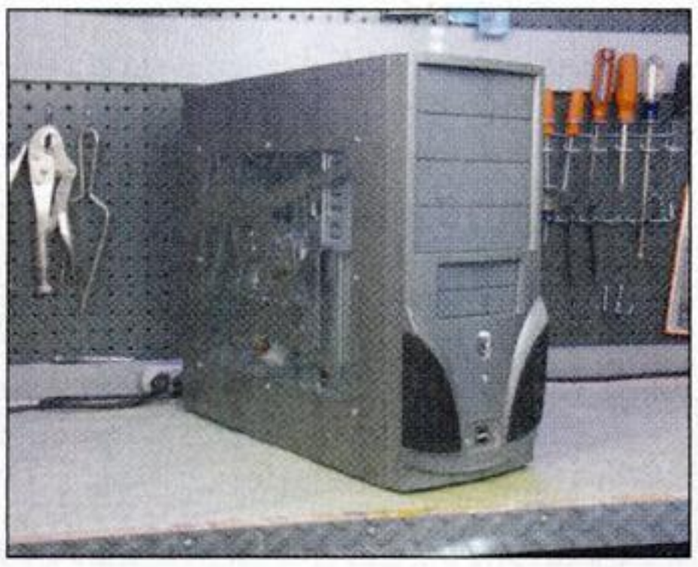
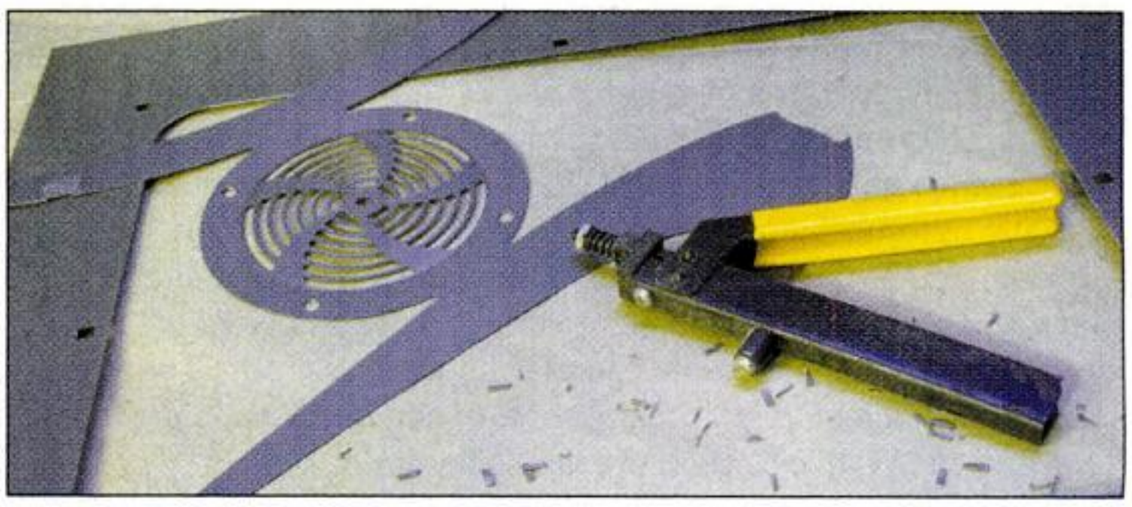
Step One: Preparing Your Case for Painting



1 My goal for this project was to purchase the cheapest, most hideous case I could find. If I could then make it just a little bit better with a few coats of paint, the project would be a success. My neighborhood haunt on 8th Avenue in Brooklyn is a small PC shop called CompuStar, and it's there I found the perfect subject for $25. I removed the right side panel and the plastic front bezel with the weird "alien eyes" intake vents. The power and reset buttons, along with the USB/speaker ports, were also removed and stored in a plastic baggie for safekeeping.

2 I removed the plastic window and took the hand nibblers to the offending side panel. With my rotary tool and sanding drum attachment, I cleaned the cut edges and sanded them smooth with some 300-grit paper. For the amount of work you put into a primo paint finish, you should avoid making structural or design changes afterwards.

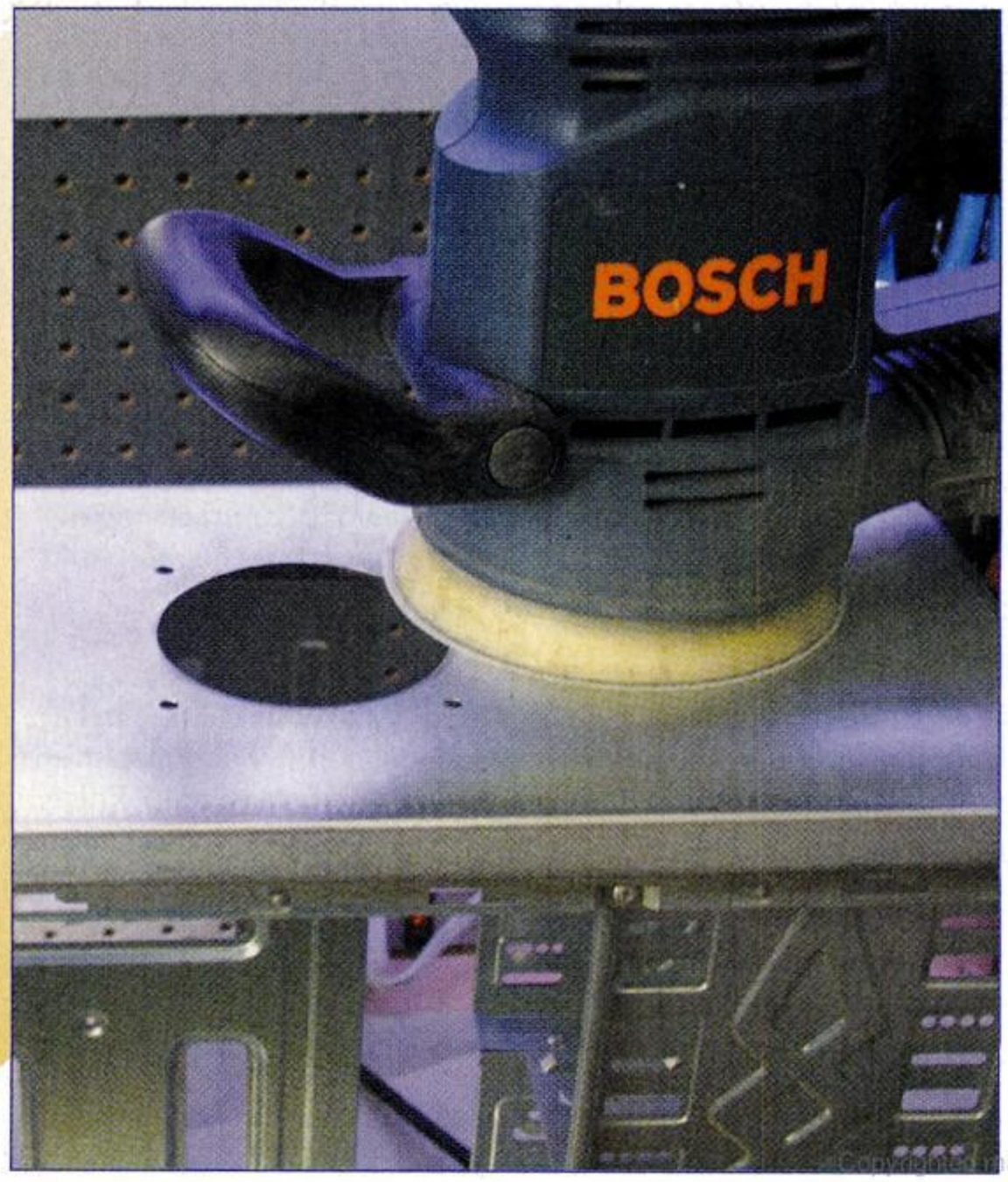


Step Two: To Strip or Not to Strip

If you have a decent-quality case, chances are the factory paint finish doesn't have to be removed down to the bare metal. Manufacturers use special etching chemicals prior to painting that help with adhesion and durability. If your paint finish is fairly sound, proceed to step five and begin wet-sanding. Apparently, the creators of my scruffy little case didn't bother with this etching process, and after testing with sandpaper on a small area, the finish was easily removed to the metal. When cases are manufactured, the sheets of metal are put through a series of bending and breaking machinery, folding and stamping the material to create the parts. This leaves the tops and side panels with edges that are slightly curled, and it can pose a problem when you sand the coats of paint. Your nice, flat sanding block will find these high spots and remove the paint down to the primer or, worse, the bare metal. Of particular concern are those pesky indented handles that are stamped into some side panels, so be sure you get those areas nice and flat. Like a good-quality mirror, the flatter the glass, the better the reflective qualities.

1 I decided to use my Bosch random orbital sander fitted with a 400-grit disc, which helped flatten all the high spots on the panels.

2 It's important when using an orbital sander to apply very little pressure on the tool because this can distort the rubber pad that holds the abrasive and create an uneven surface. By just guiding the tool along the surface and allowing the weight of the machine to do the work, you can get nicely ground case panels as a result.



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Step Three: Cleaning and Masking

Now is a good time to prepare your work area, preferably in a sunny spot outdoors away from people, plants, and other fragile living things. If you're painting outdoors, do it on days that are low in humidity. Water vapor in the air significantly slows drying time and can even cause the paint to haze as moisture is trapped between the coats of paint. If you have no choice, get your parts into a warm, dry place between coats of paint. Aerosol spray paint is best applied when temperatures are between 50 and 85 degrees Fahrenheit and when winds are low, so keep this in mind when selecting your work area. For the work surface, a pair of sawhorses with a plywood top is perfect. Protect your work area from overspray with newspaper; just remember to tape the paper down to avoid a gust of wind (or the spray-can propellant) from blowing it onto your painted parts.

We probably don't need to tell you this, but make sure you're not standing downwind when applying your paint!

1 Having sanded all my panels, it's time for a little cleanup. I like to use denatured alcohol on bare metal because it evaporates quickly and removes any oils left over from the original manufacturing. Removing the oils is important if you decide to paint the interior of your case, even though this is often left unfinished. Painting the interior, however, does give your rig a nice, finished (dare we say it?), automotive look.

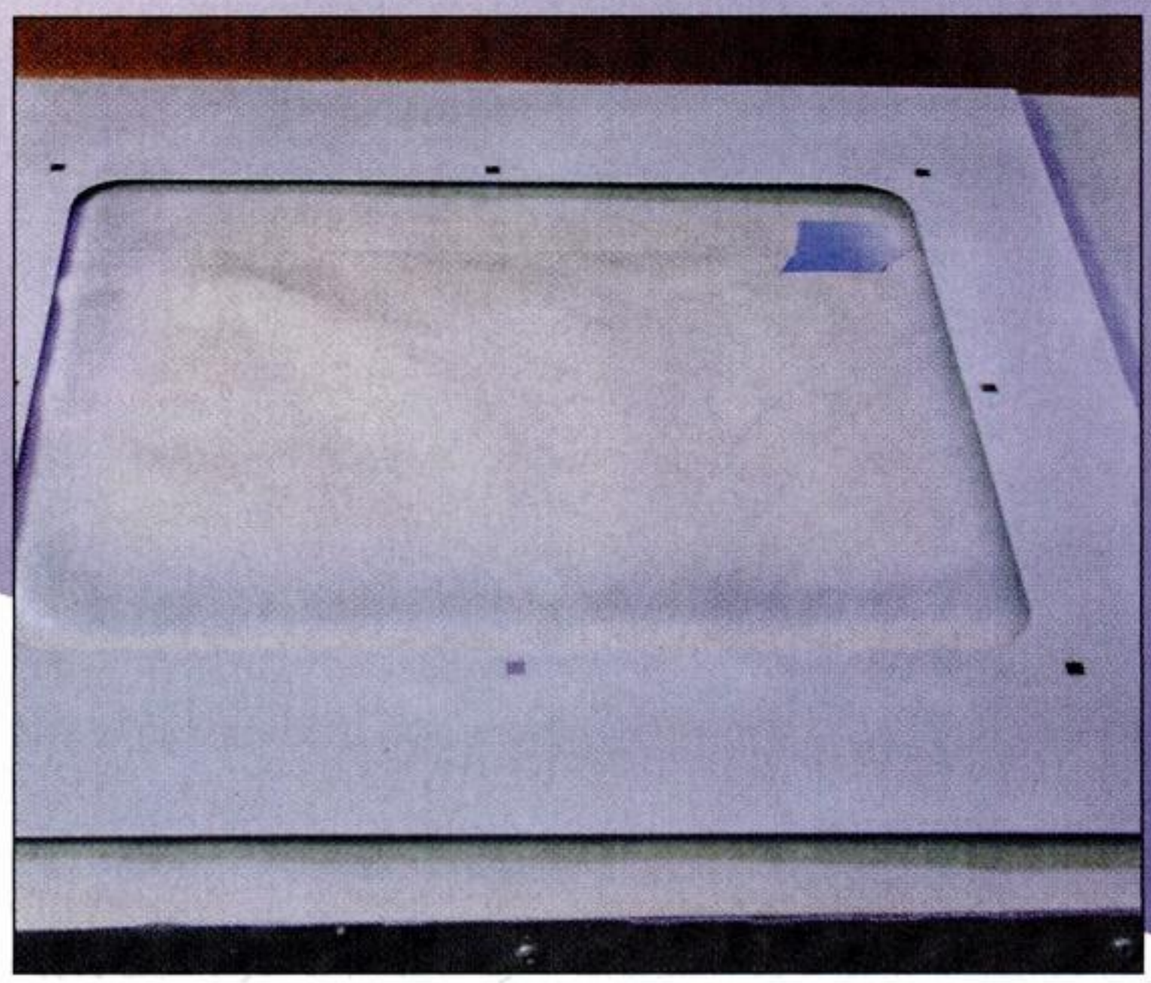
2 Painter's masking paper is your best bet for protecting your case from overspray, drips, and the little accidents that are bound to happen with painting. Using newspaper to protect your case is acceptable only if you apply the sheets in several layers because it tends to be porous and allows the paint to bleed through.

Using a low-tack painter's masking tape like the blue tape shown here is recommended because it will be left on for a few days while the paint dries between coats. Carefully cut away excess masking tape with a pen knife, being careful not to mar the surface of your case.

Step Four: Priming

1 It's time to get that rattle can shaking and get down to business. Use a clean rag or tack cloth to remove any debris or particles from your work. After shaking the can of spray primer for a minute or so, give a 3-second blast of paint onto a piece of scrap paper to charge the can and clear out any dried particles. Start spraying the paint for a moment off of the panel and then across it in a sweeping motion about 10 inches away from the surface, ending each course of paint off the panel. You should start painting at the bottom of the panel and work toward the top, holding the can at a slight angle to the work so the spray pattern is evenly distributed and slightly overlapping each course. Don't stop in the middle of your work and change directions. Stopping or changing painting directions can cause the paint to pool and create heavy spots. Your first coat will only be a light dusting of paint, and after about 8-12 minutes, you can apply another. The primer coat doesn't have to be perfect, so it's a good opportunity to practice your sweeping motions for the color coats.

2 Three or four coats of primer should be enough to cover the surface; after that, let your piece dry for about an hour in a warm, dry area or a nice sunny spot where it won't be disturbed. Let the primer dry properly and thoroughly—don't poke at it, pick debris from it, or otherwise look at it funny. Leave it be, and go do something else.



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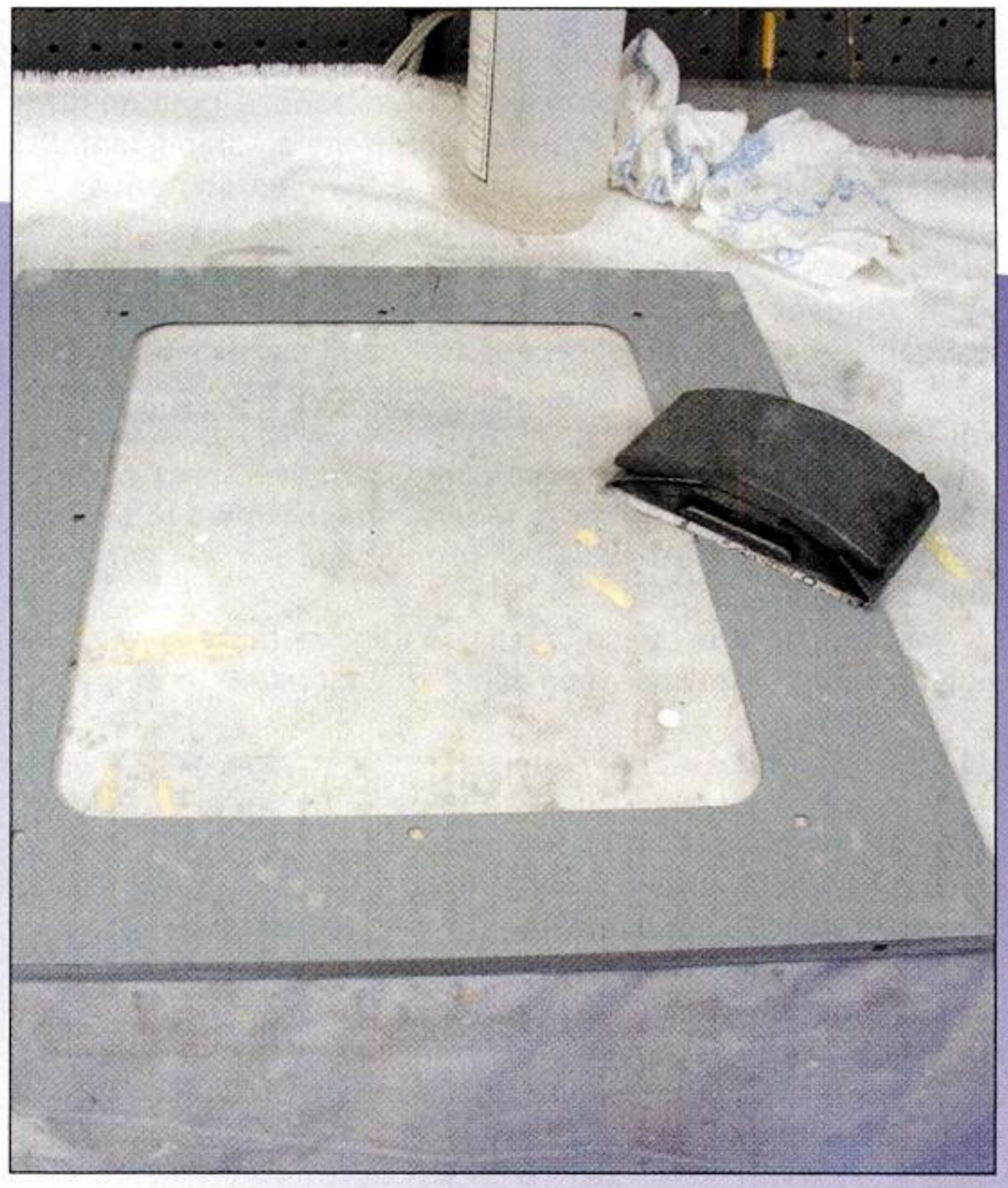
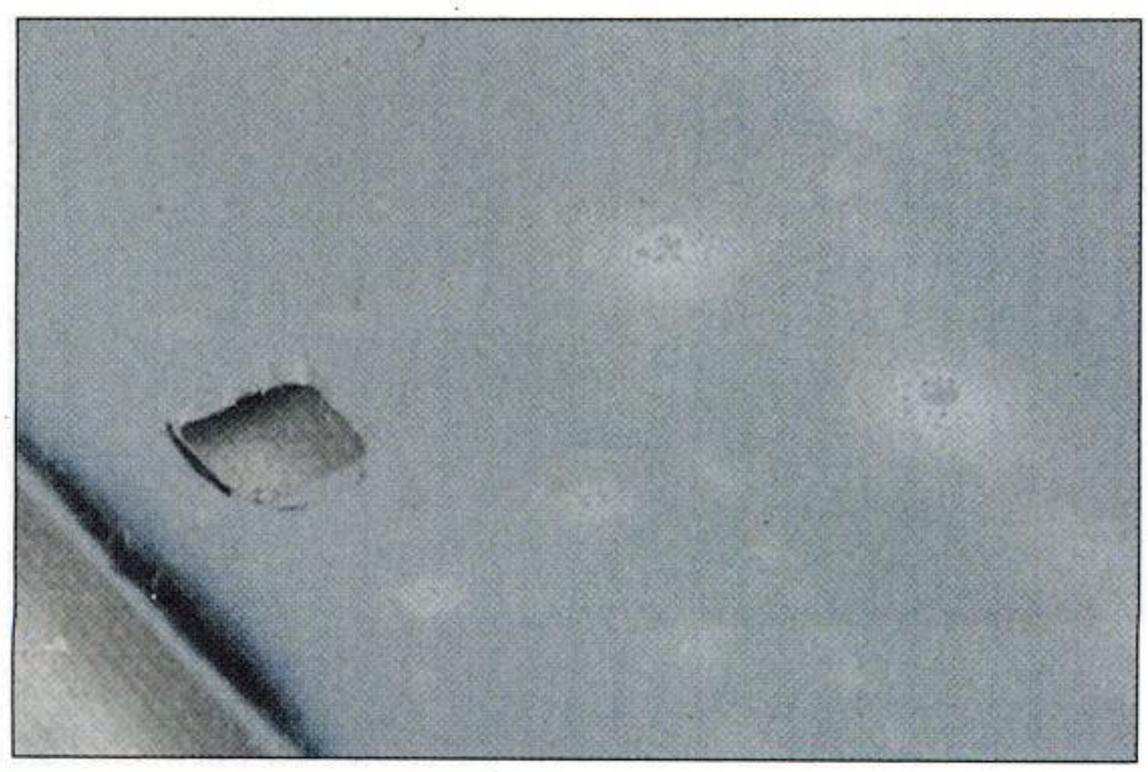
Step Five: Wet-Sanding the Primer Coat

When your primer coat is dry, it's on to the wet-sanding to get that paint flat and silky smooth. Prepare your work area for a messy job by covering your work surface with a canvas or plastic drop cloth. Have plenty of paper towels on hand for cleanup as you work. I keep a spray bottle filled with fresh water handy so I can clean up the "mud" that wet-sanding leaves behind and inspect my progress. Put a few drops of dishwashing liquid in a bowl or container and fill it with warm water. The soap helps the paper glide over the work by reducing the surface tension of the water. Load your sanding block with 400- or 500-grit paper and let it sit in the soapy water for about a minute until the paper is soaked and properly conditioned.



1 Begin sanding the panel in an up and down direction and with light pressure until you've reached the opposite side. Now turn your panel clockwise so the left side becomes the top; begin sanding again, this time crossing over the grain of the previous pass.

2 Going in a diagonal direction also helps to get an evenly sanded surface. A circular motion is not recommended for wet-sanding because this can cause the corners and edges of your sanding block to dig into the paint and cause problems. Dip your sanding block in the water several times to rinse off the paint after each pass. If you find the sanding block sticking to the surface, you might have too much water on the panel, which can create a suction effect. In this case, remove some of the water from the surface with a paper towel. After a few passes with the 500-grit to get the heavy particles from the surface, load your sanding block with either 600-grit or 1,000-grit and higher depending on your progress. For trouble spots like the side panel handles, you should avoid using the sanding block and get these tight areas by hand, using a small piece of sandpaper.



3 If you sand down to the previous layer of paint or even the bare metal, don't get discouraged; it's your panel's way of saying, "I have a high spot that needs sanding!" As you can see here, that's exactly what happened to me. If this happens, you just have to sand down that high spot and then give it a few more coats of primer after a good fresh water cleanup of the panel. *Your final wet-sanding should leave your* panel with a buttery soft satin finish that is even and free from heavy scratches.

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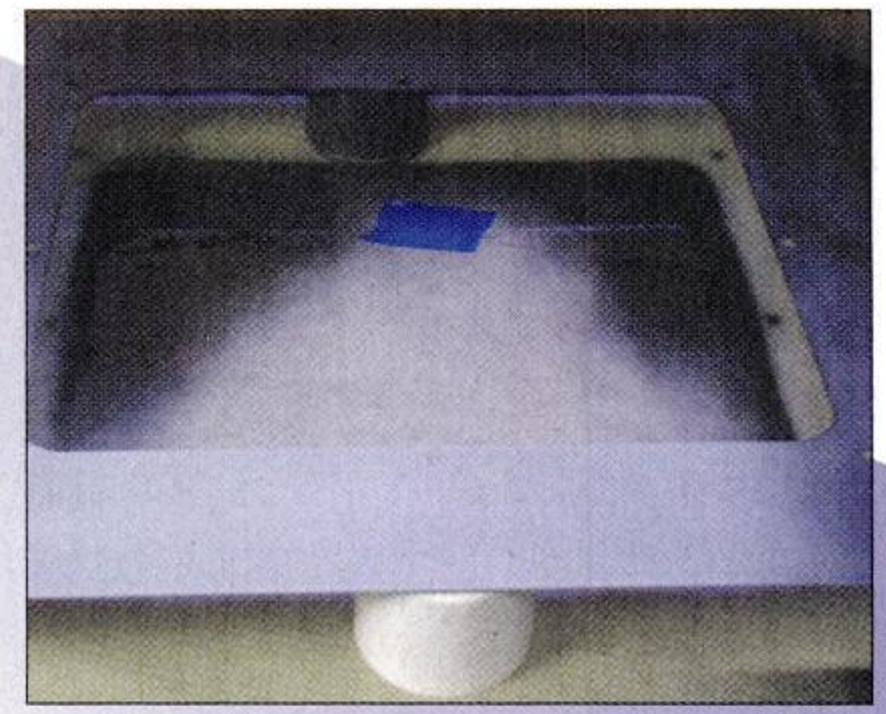
Step Six: Applying the Color Coats (and, you guessed it, more wet-sanding)

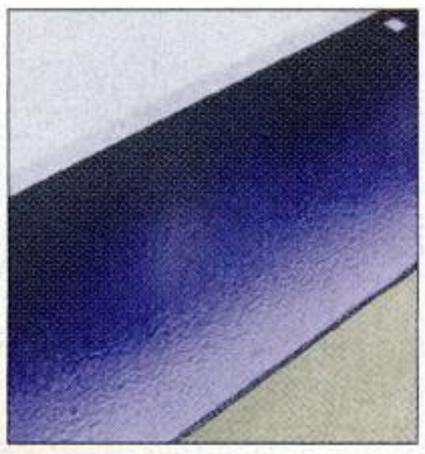
1 As with the primer, shake the can of paint for a minute or so and give a 3-second blast of paint onto a piece of scrap paper to charge the can and clear out any dried particles. Start spraying the paint for a moment off of the panel and then across it in a sweeping motion about 10 inches away from the surface, ending each course of paint off of the panel. You should start painting at the bottom of the panel and work toward the top, holding the can at a slight angle to the work so the spray pattern is evenly distributed and slightly overlapping each course. Don't stop in the middle of your work and change directions because this can cause the paint to pool and create heavy spots.

Color coats should be applied a little more heavily than the primer, creating a nice wet-looking surface after a few passes.

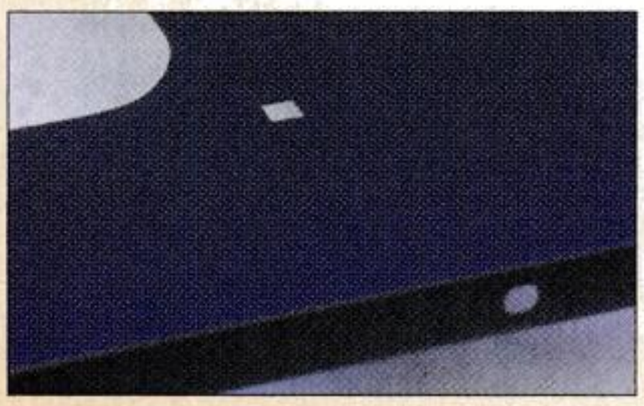


Color paint takes longer to dry between coats than primer, so give each one about 15 minutes drying time. After four to six coats of color, let your work dry overnight or, better yet, a full 48 hours before beginning the wet-sanding. This gives the paint time to harden and helps prevent the paint from getting soft during sanding.

2 One drawback of painting with aerosol cans is the dreaded "orange peel" effect. Spray cans do not have the finest mist patterns, and this causes a dimpled surface texture, resembling the skin of an orange. Your next course of wet-sanding is intended to flatten the paint, removing every last speck and dimple on the surface until it is satiny smooth and slightly reflective.

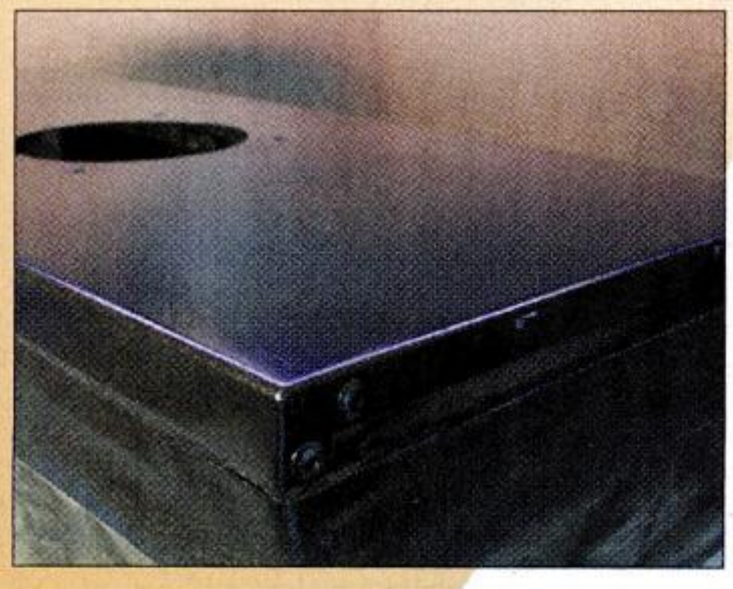


3 You should apply a few more coats of paint at this point and repeat the sanding process... again. For this project, I stopped after applying the second round of paint, allowed it to dry for a few days, and then did my final sanding.

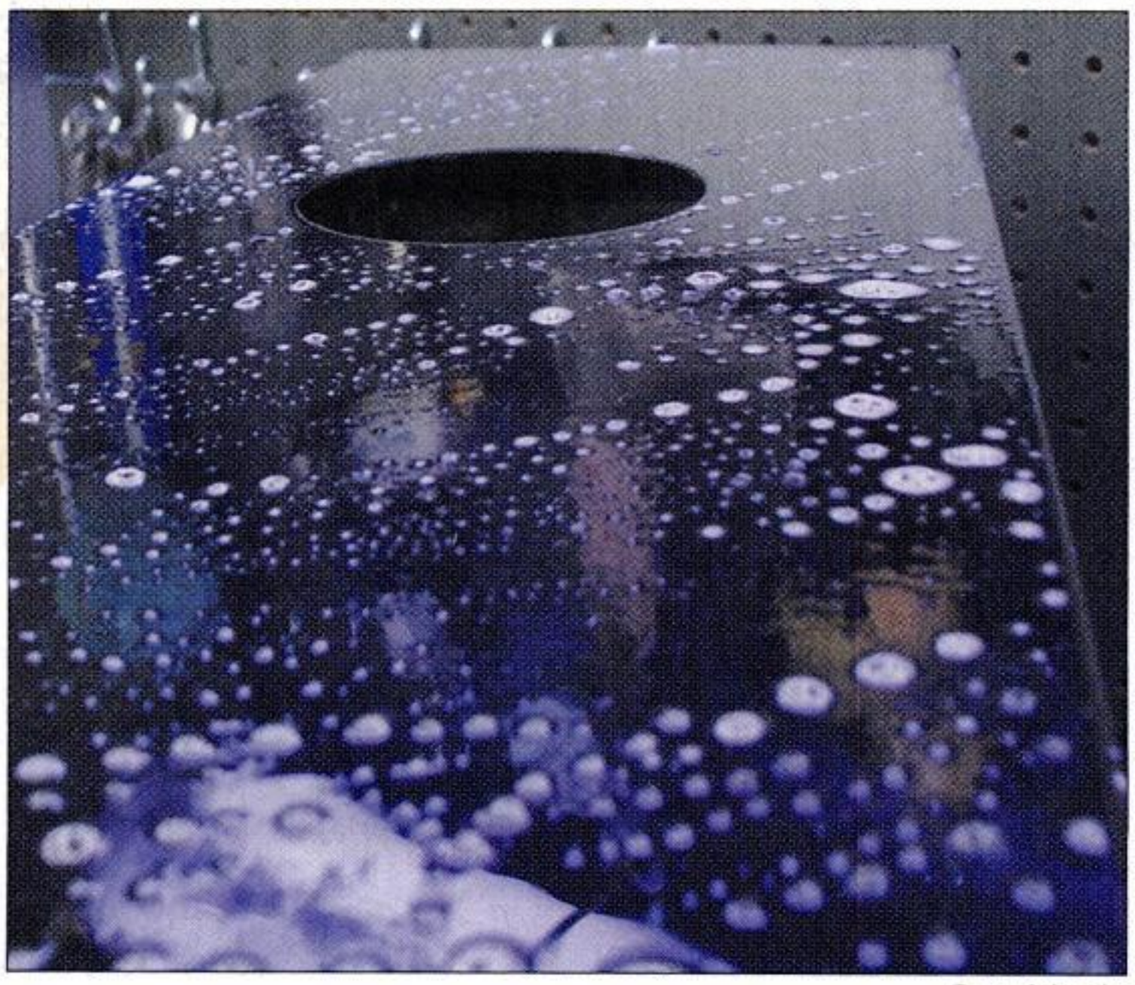


4 For the top panel, I used a lacquer-based "candy apple" metal-flake paint from Plasti-Kote. Unlike the solid enamel color, metal flake should not be wet-sanded directly.

In metal flake, tiny metallic particles are suspended on the surface, creating a glitter effect. Sanding this coat dulls those little metal bits. When applying metal-flake paint, don't spray the surface of the work in only two directions. Rather, cover the surface by using a random combination of up and down and left to right motions. This helps evenly distribute the metallic glitter over the surface and prevents streaks and clusters of particles. Your last coat of lacquer should be as heavy as can be without creating pools or drips, and it should be allowed to cure for 48 hours. After that, a few heavy coats of a compatible clear topcoat should be applied.



5 These clear coats must be wet-sanded with 600- to 2,000-grit paper until the surface is smooth, flat, and orange-peel free.



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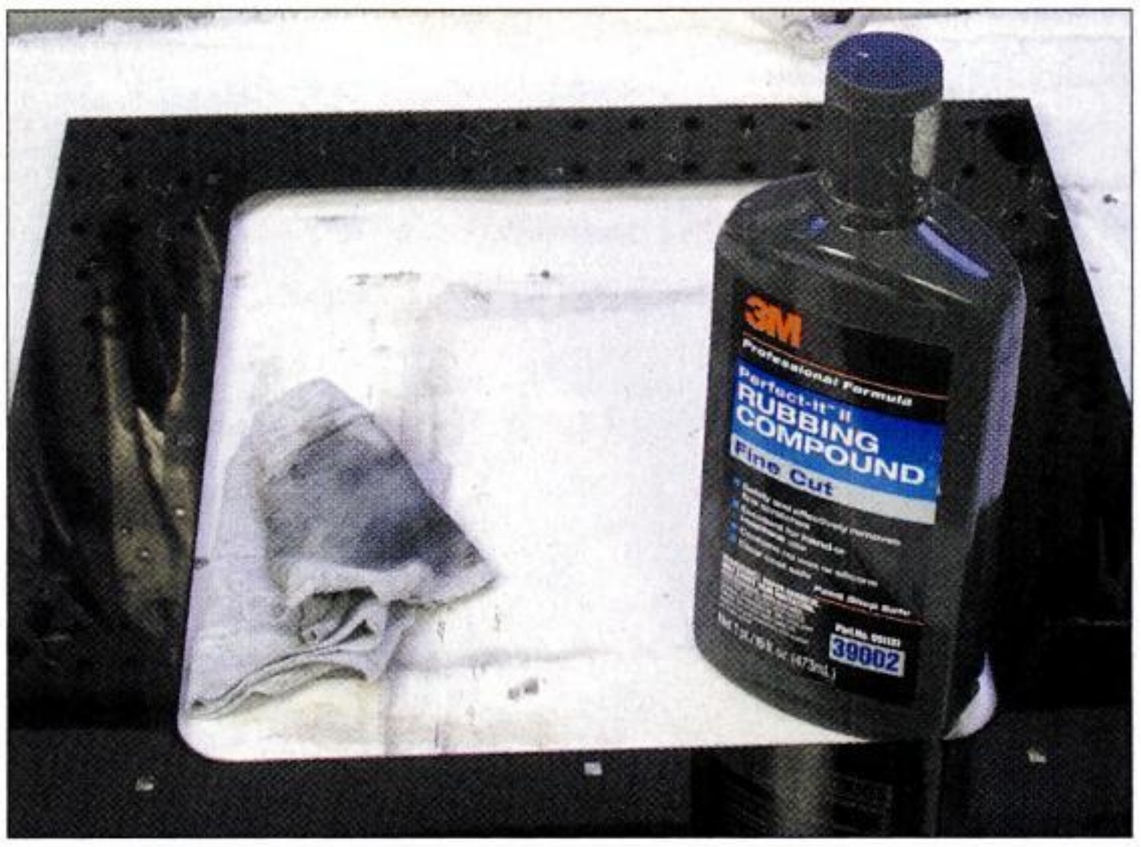
Step Seven: Rubbing Compound and Finishing Glaze

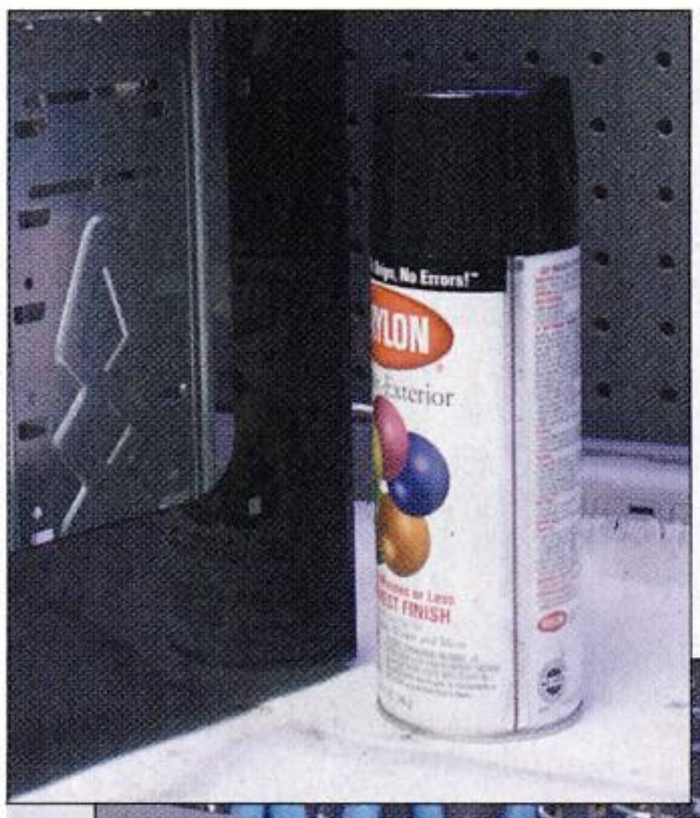
1 It has been a few days, and you just can't stand to let the painted parts sit around anymore, right? The final step is to use a rubbing compound and polishing glaze on the painted surfaces to draw out the beauty and shine. The rubbing compound is basically liquid sandpaper, but the abrasive particles are extremely fine, equivalent to about 6,000-grit. This removes the very fine scratches left behind by the 2,000-grit paper. Apply a small amount of compound (about the size of a nickel) to a clean terry cloth and begin rubbing a small section of painted surface with firm pressure in a circular motion. Keep rubbing until dry; then either flip the cloth over or use a clean one to remove the remainder of the compound.

2 You'll notice a bit of color left behind on the cloth, which is normal.

3 After the entire surface has been rubbed with compound, you should be left with a nice reflective surface. But it doesn't end here. Next comes the polishing glaze to create a deep, wet-look shine. With a cloth, apply the glaze to the entire surface and rub with a firm, circular motion. With a second cloth, buff the entire surface until it's clean and shiny.



4 All that exhaustive wet-sanding and interminable waiting for paint to dry has paid off. You can clearly see the mirror-like shine and the sharp reflections on the surface of the paint. Nice!



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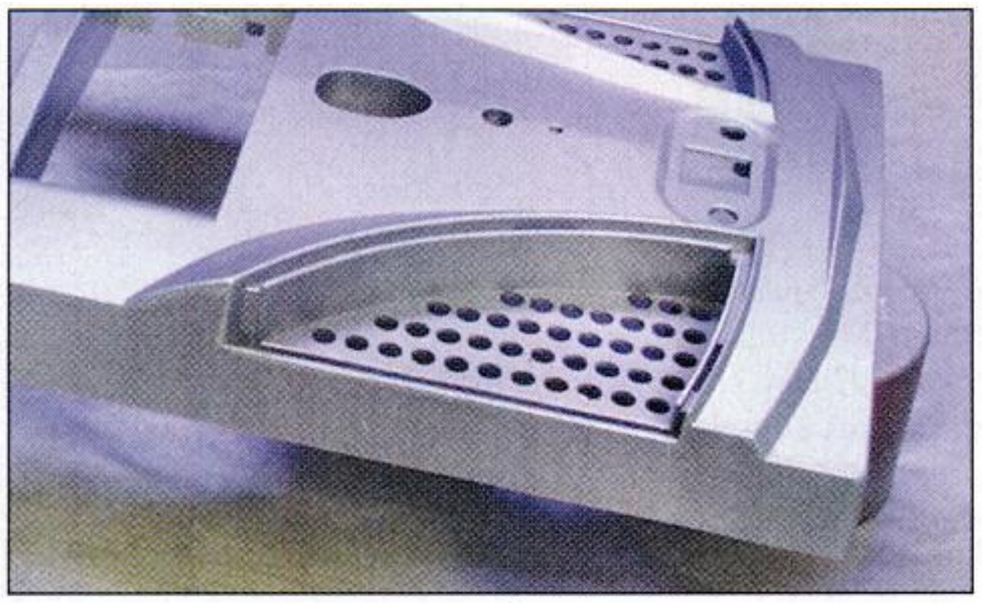
Step Eight: Painting the Bezel



1 For the bezel, I had some Dupli-Color METALCAST blue in my paint cabinet and decided to use it up. The METALCAST paints simulate anodized metals in a two-part process. The first part is a ground coat of metallic silver paint, over which the color coat is applied. The color coat should be done lightly; too much paint and the ground coat is completely covered, ruining the effect. It's a pretty tricky paint to get used to, but with practice you can create an anodized look that can really fool people.

2 If you have the will and patience, you can get the same mirror shine on all the plastic parts of your case as well. Follow all the same steps as previously described, with the exception of using the sanding block. This level of detail should be done by hand, with small pieces of sandpaper.

Step Nine: Admire, Gloat

For the photo op, I simply threw in a few lights and a front bay fan controller with blue LEDs. I can now consider this project a really cheap case with an expensive-looking paint job. In the end, I think I succeeded in making this case look a little bit better than it looked when it first arrived on my workbench. OK, maybe *a lot* better. ■

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Ask the Doctor

Symptom ▶ Diagnosis ▶ Cure

POWER-SUPPLY UPGRADE CRIPPLES BOOT TIMES

I recently replaced my croaked-out 400W power supply with a new 400W PSU from Vigor. My PC now takes about five times as long to boot. All the additional time is spent in the power-on self test (POST). When it does boot, everything appears to run fine. Any ideas why this happens?

—EDEN STOLLMAN

The Doctor suspects that your BIOS was reset either when the old power supply took a dump or during the swap out. You should go into the BIOS and look for the setting that lets you enable "rapid boot," "quick boot," or "quick power on self test." If such a setting were disabled, the machine might spend more time performing a test of the RAM. With a gig or more of memory, testing each byte could take quite some time.

An alternative diagnosis is that something was bumped loose during the upgrade. An IDE cable or power cable that's partially disconnected could be the cause of the boot delay. If none of the above are the problem, it's possible something was damaged when your original power supply went bad.

THE DAY THE MUSIC DIED

After putting my whole music library onto my 4GB iPod, I formatted my PC and reinstalled Windows XP Pro and *iTunes*. Upon connecting my iPod, a window popped up and asked if I wanted to update the library on my iPod with the library on my computer. Thinking it meant the opposite, I clicked yes. Now, all the music is gone from both my iPod *and* my PC. Is there any way to recover this music?

—NO MUSIC

While your iPod might seem like a good place to keep an emergency backup of your music, you're much better off saving your tunes to DVD-R/RW.

Once you copy music onto your iPod, there's no Apple-sanctioned way to remove it—it's the company's way of preventing nefarious music sharing. Still, it's possible to pull music off the iPod and back onto your computer using an application such as *PodUtil* (www.kennettnet.co.uk), but even this is unlikely to work once your iPod has been sync'd with your tuneless PC.

Of course, if any of the music you lost was originally purchased through *iTunes*, you can always download it to your PC again, as you are the rightful owner. If that's not the case, consider this: Losing all your music is the perfect opportunity to re-rip everything using one of the new lossless encoders, such as FLAC or AAC Lossless.

VIDEOCARD DISPLAYS WEIRD SPOTS

I have an ATI Radeon 9600 XT 256MB videocard that has been bugging me for a long time. When I play *Need for Speed: Underground* and *Prince of Persia*, the graphics start to break down. The screen shows a lot of weird blemishes and you can hardly even see what's happening. I've already updated to the latest driver. I have e-mailed ATI and all I got back were some directions that I've already taken into consideration.

—GEORGE

The problems you describe are representative of one of two things. Either your card is overheating or it's actually failing. To combat the first problem, the Doctor recommends installing an additional computer fan (8cm or 12cm would work best) to move air over the top and the bottom of your videocard. If that doesn't help, you should send the card in for warranty service. If your warranty has expired, you might have to purchase a new videocard.

PAUSING VIDEOS PISS ME OFF

I've got a new Sony double-layer DVD burner (DRU-700A), which appears to produce great results with a single exception. Halfway through each two-hour film I copy, there's a one-second pause in the playback. It's reproducible on three different DVD players. I've scrutinized the master frame-by-frame on my hard drive and I see no problems. Is there any way to avoid such glitches?

—MAX BRABSON

What you've encountered, Max, is known as the layer switch. When you play a disc composed of two layers, whether it's commercially stamped or burned with one of the new double-layer optical drives, there's a brief pause when the laser reaches the end of the first layer and switches to the second layer.

There are a couple options for getting rid of the pause. If you can make your movie fit on a single-layer disc, you won't experience the problem. Alternately, your DVD-burning app may let you specify the location of the layer switch. If you switch layers when the screen is black, the pause is much less noticeable. As we went to press, Adobe's *Encore 2.5* is the only app we know of that lets you do that, though.

NEW HARD DRIVE ADDS TO BOOT TIME

I just replaced a dead hard drive with a Western Digital 80GB drive. The first thing I noticed when I started up the machine is an extra 20 seconds added to the boot time. Boot now takes about 50 seconds, which isn't super offensive, but it is annoying. It goes through POST and then at about the 15-second mark, I get a black screen for about 20 seconds, then the Windows XP logo. From then on everything works fine.

I'm running an Intel 845PESV motherboard, with the latest chipset drivers and all the latest device drivers. I'm using Windows XP Pro with SP2.

—RICK WOOLFORD

The most likely cause is a jumper configuration issue. Double-check the jumper settings on all your IDE devices. If everything is correct and you're setting the master/slave relationship manually, consider setting all the devices to cable select. The Doctor has seen slow boot times on certain boards and chipsets when drives are set to master/slave manually. If that doesn't work, reseat the IDE cable and/or try a different 80-pin cable. Finally, try to disable unused devices, such as serial and parallel ports, and if you're not using a USB keyboard or USB mouse, turn off legacy USB support, as well.

CPU CANNOT BE SET TO PROPER MULTIPLIER

My system refuses to boot or install Windows if I set the CPU multiplier to its proper 13.5x setting for my Athlon XP 2200+ on a 133MHz frontside bus (to achieve its 1.8GHz rated speed). If I underclock down to the 13x multiplier, then it will install Windows fine and the system basically runs OK, although some video games still crap out. If I lower the multiplier again to 12.5x, all these games run perfectly.

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The CPU came from a different motherboard (MSI K7N2 Delta-L), which apparently had the same problems. The weird thing is, I've been using an Athlon XP 3000+ without incident on both motherboards.

—FRAGALOT

Because the processor has issues running at 1.8GHz (13.5 x 133) on two different motherboards that are able to run higher-clocked Barton-core Athlons, the problem likely lies with your CPU. The CPU is either bad or you have a remarked processor. If you're not familiar with remarking, it occurs when crooks obtain a large shipment of CPUs that are meant to be sold as, say, Athlon XP 2000+ CPUs, and then modify the procs to look and run like Athlon XP 2500+ CPUs. This generally goes unnoticed unless the processor can't run at the higher speed or the modifications on the chip wear off, causing the CPUs to stop running at the higher speeds.

That's one possible scenario, but it would be odd for a thief to waste time reclocking a chip from 2000+ to 2200+ as there's very little profit to be made. Which brings us back to a bad CPU. You should contact the store where you purchased the CPU to see if it's covered by warranty. AMD might also warranty the CPU if it was a retail-boxed part.

WINDOWS XP REFUSES TO UPGRADE SETUP FILES FOR CD

I followed the procedures in your "Update Your Windows XP CD" article (October 2004), but I wasn't able to get past step two, "Update Your Setup Files." I extracted the files from the XP Service Pack 2 CD and typed the commands from the prompt. When I tried to update existing Windows setup files, I received the following error message: "This service pack cannot be integrated into a destination that also has integrated software updates."

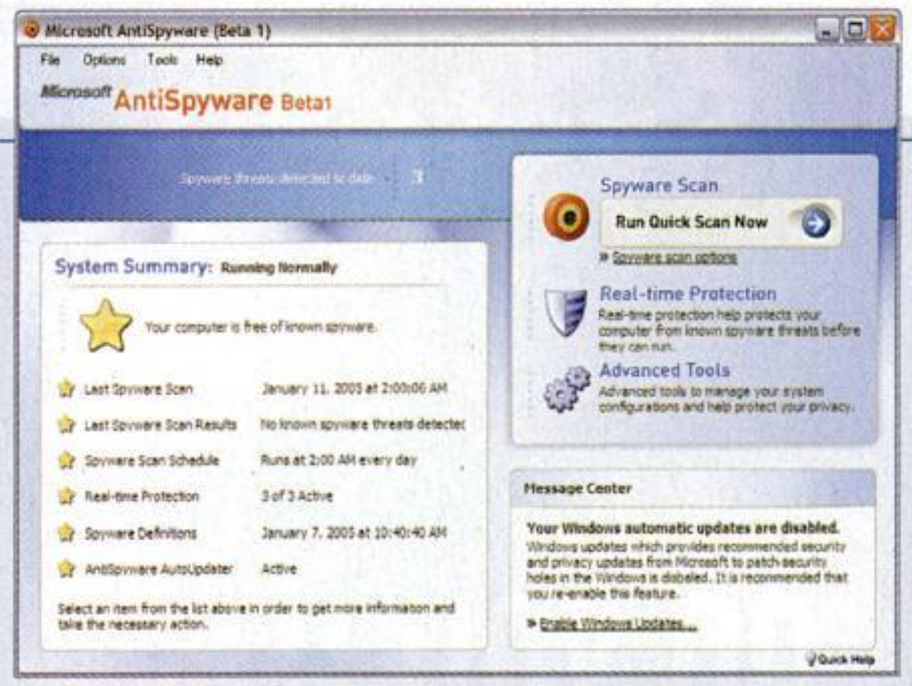
—CARLOS HERNANDEZ

Unfortunately, your PC came with a non-standard version of Windows, most likely from a large OEM vendor such as Dell or HP. The vendor has already included an earlier Service Pack or hotfixes with your Windows CD, which prevents the SP2 slipstream from running. There's really no solution, short of buying a new retail copy of Windows XP.

SPYWARE CLINGS DESPITE UPGRADE

I'm writing you after trying to clean spyware from my PC. I tried several spyware programs and updated to Service Pack 2, but nothing can get rid of "xlime.offeroptimizer.com" pop-ups. Please help!

—RAGED ABBASSI


Microsoft AntiSpyware (Beta 1)
File Options Tools Help
Microsoft AntiSpyware Beta1
Spyware threats detected to date: 3
System Summary: Running Normally
Your computer is free of known spyware.
Last Spyware Scan January 11, 2005 at 2:00:06 AM
Last Spyware Scan Results No known spyware threats detected
Spyware Scan Schedule Runs at 2:00 AM every day
Real-time Protection 3 of 3 Active
Spyware Definitions January 7, 2005 at 10:40:40 AM
AntiSpyware AutoUpdater Active
Select an item from the list above in order to get more information and take the necessary action.
Spyware Scan
Run Quick Scan Now
» Spyware scan options
Real-time Protection
Real-time protection helps protects your computer from known spyware threats before they can run.
Advanced Tools
Advanced tools to manage your system configurations and help protect your privacy.
Message Center
Your Windows automatic updates are disabled.
Windows updates which provides recommended security and privacy updates from Microsoft to patch security holes in the Windows is disabled. It is recommended that you re-enable this feature.
» Enable Windows Updates...
Quick Help

Microsoft's new anti-spyware program is surprisingly good. In our informal tests, the first beta tracked down and removed more spyware than any of the competitors.

Sometimes anti-spyware developers just can't move fast enough to add the functionality necessary for combating the latest, nastiest spyware. That's why we recommend using multiple tools instead of just one. The Doctor recommends adding at least one more application to your arsenal, either *Ad-Aware* (www.lavasoft.com), or Microsoft's free *AntiSpyware* (www.microsoft.com) beta app.

The strain of spyware you mention—xlime.offeroptimizer.com—is especially difficult to expunge with current anti-spyware apps, but a quick trip to Google turned up a fairly painless solution. The problem is that the xlime.offeroptimizer tricks Windows into protecting its files with System Restore. When your anti-spyware app removes them, System Restore just puts them right back where they were. The trick is to first disable System Restore (Control Panel, then System, then click the System Restore tab, then uncheck System Restore). Next, restart the computer and go into Safe Mode by pressing F8 before Windows starts. Then you need to unhide the hidden system files. Go to Tools, then Folder Options, then View. Uncheck the box that says "Hide protected operating system files." You'll also want to select "Show hidden files and folders." Go to Start, then My Computer, and search for bi.dll and localnrd.dll. Delete both files, and then restart.

Because of the lightning-fast pace of spyware development, the files used by this particular strain could change, so if these instructions don't work, be sure to search Google for the latest update.

FORGOING A FIREWALL

I hear that if you don't run a software firewall, your PC will be compromised within minutes. What about people who use a DSL router? I run a four-port SMC Barricade DSL router and the IP address for my internal network is different from my Internet address. I also have the "Disregard ping from WAN" option checked. How exposed am I to attacks?

—MICHAEL STEFANI

If you're using a NAT router—which is the case if your computer's IP address uses one of the private ranges that start with 192.168, 10.15, or 172.16—you're protected from most self-spreading worms on the Internet. But if an infected machine finds its way onto your LAN, either via an unsecured Wi-Fi access point or a direct connection, all your machines will be at risk. If you secure your wireless network, and don't frequently carry machines in and out of your home network, then you're probably OK.

It's also worth mentioning that firewalls really only protect you from worms. A firewall won't protect you from viruses that spread from clicking attachments, or naughty ActiveX controls that install spyware on your rig.

MOTION SICKNESS IN *HALF-LIFE 2*

I have been looking around in the forums and see plenty of articles about motion sickness in *Half-Life 2*. I've played *Doom3*, *Far Cry*, *Typhoon Rising*, and a slew of other games on the same PC and *Half-Life 2* is the only one that makes me want to throw up. Any ideas to reduce this problem?

—MIGUEL

We used to think this was an issue limited to little girly-men, but our own Logan Decker experiences the same problem. He recommends cures that also work for seasickness. Try chewing a little ginger root, or if that doesn't work, some people say Dramamine helps.

BANNED SOFTWARE FAILS TO ACTIVATE

I picked up *DVD X Copy Gold* back in 2003 knowing I would use the program sometime in the future. Because I received a DVD burner as a gift, I installed the program and tried activating it, but the program won't activate. I remember reading something about the program being outlawed or just pulled from store shelves. Is there any way I can get this program to work?

—MIKE SHERRETZ

Sadly, because 321 Studios—the maker of *DVD X Copy*—is no longer solvent, you're out of luck. The good news is there are lots of good, cheaper alternatives for DVD backups available today. If you want the full scoop, turn to page 26, where we show you exactly how to back up your discs. If you just want to get a quick and easy solution for DVD-to-DVD copying, the Doc recommends *DVD Shrink*. ■

It's not a pretty world out there kiddies. There's spyware everywhere, worms out the wazoo, and computer viruses that spread faster than chickenpox. Even during the digital plague, hardware still fails and software still crashes. Fear not, the Doctor can help. E-mail him at **doctor@maximumpc.com** and he'll solve your computer woes.

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How To...

A step-by-step guide to tweaking your PC experience

Konfabulate YOUR DESKTOP

Maximize your screen real estate with dozens of handy data-gathering widgets

BY WILL SMITH

You just bought a kick-ass, 23-inch, flat-panel display—which you paired with your old monitor—and now you have more screen real estate than you know what to do with. Enter *Konfabulator*. *Konfabulator* lets you add applications and instrumentation to your desktop that can display damn near any info you want. You can add everything from the weather in Bogotá, to your CPU usage, to the traffic conditions in your own home town, to cover art for the track you're playing in *iTunes*. There are also dozens of utility widgets that serve as shortcuts to your frequently used FTP sites and quick Internet searches.

Konfabulator works its magic through a combination of Javascript code (which scrapes the net for the data you need) and XML (which describes the widget's appearance). You'll find more than 400 applets on *Konfabulator's* web site; if you're familiar with Javascript and XML, you'll discover that it's very easy to create your own.

The best thing about *Konfabulator* is its low impact. Even with 10 or more applets running, the *Konfabulator* absorbs just a tiny fraction of your CPU and memory. Interested? Let's get started then!

Download and Install Konfabulator

This step's really easy. Go to **www.konfabulator.com** and download the trial version of the software. Once you've installed it, the Getting Started widget will activate several common widgets, including a clock, a stock ticker, and a basic weather applet. Take a few minutes and play around with each widget. You can drag and drop them anywhere on your desktop, but the real fun starts when you get into the right-click Preferences. There you can customize your widgets to suit your needs—after all, if you live in Omaha, you don't need the weather in Kalamazoo. Once you have a good grip on what your widgets can do, move on to step two.

***Konfabulator* is like an instrument panel for your desktop. Add any info you want directly to your desktop without taking a huge performance hit!**

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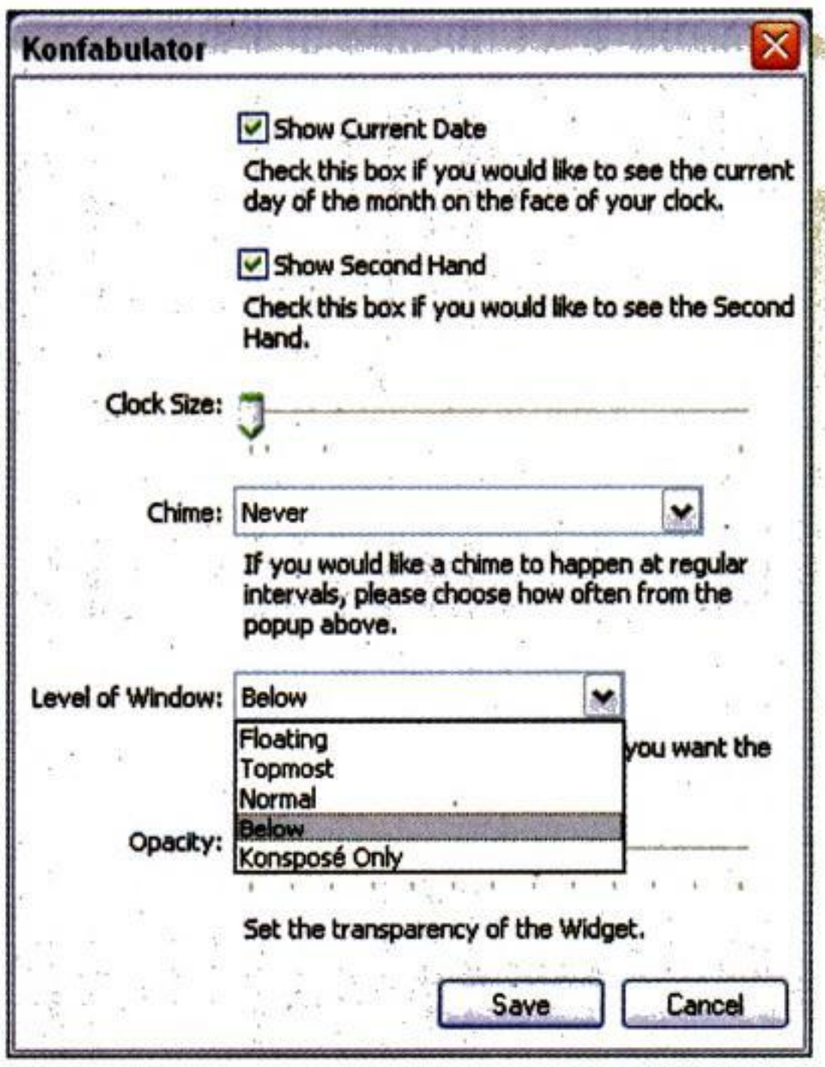
Install New Widgets!

This is where *Konfabulator* gets really cool. Head over to Widgetgallery.com and browse its vast selection. If you find yourself intimidated by the sheer number of widgets available, you'll find a list of our 10 favorites on the very next page.

Each widget is a self-contained file, with the clever extension of ".widget." To load a new widget, simply double-click the .widget file. *Konfabulator* won't actually copy your .widget files into the My Documents/My Widgets directory, so it's very important you move them there yourself after you've downloaded them, and before you run them the first time. If you don't, they'll end up scattered all over your hard drive and they'll be impossible to manage.

We highly recommend that you store all your widget files in the My Widgets directory in My Documents. If you don't, *Konfabulator* might get confused and have trouble restoring your desktop.


Konfabulator
Show Current Date
Check this box if you would like to see the current day of the month on the face of your clock.
Show Second Hand
Check this box if you would like to see the Second Hand.
Clock Size:
Chime: Never
If you would like a chime to happen at regular intervals, please choose how often from the popup above.
Level of Window: Below
Floating
Topmost
Normal
Below
Konsposé Only
you want the
Opacity:
Set the transparency of the Widget.
Save
Cancel

You control the precise placement of your widget, including its level of depth on your desktop. By setting the Level of Window option, you can float a widget above all other windows, or embed it in your desktop.

Tweak Your Levels

Konfabulator widgets behave differently than most other windows. There are five levels that most widgets can use, but there are some subtle differences between the options. When you open most widget preferences, there's a "Level of Window" option. Here's what happens with each level setting.

- **Normal:** Normal-level windows act just like other windows. You can move them around and click on them to make them the currently active window.

- **Topmost:** Not surprisingly, topmost windows are always on top of other windows. Here again, you can click on them and move them like any other window.

- **Below:** When you use the Below setting, your widget will effectively be embedded in your desktop. You can click and move it, but it will appear underneath any other windows on your desktop.

- **Floating:** The Floating setting puts the widget above any other windows on your desktop, but you can't interact with it at all. The floating setting is great for objects—such as clocks—that provide info you need, but that you don't need to interact with. If you combine the floating setting with 80-percent transparency, you'll get an unobtrusive desktop item that won't interfere with your day-to-day computing.

- **Konsposé Only:** The Konsposé-only setting places the widget in question on your desktop only when you're in *Konfabulator's* special full-screen F8 mode. We don't use this setting much.

Working with Floating Widgets

Once you've set your widgets to floating mode, you can't click or drag them; in fact, you can't really interact with them at all. If you want to move a widget or change its preferences, you'll need to enter the Konsposé mode.

Konsposé mode lets you see and move all your widgets easily. To enter it, press the F8 key on your keyboard, drag your widgets as you please, and then click an empty area of the desktop to return to your normal desktop mode. Pretty easy, huh?

The Konsposé mode lets you move or modify embedded widgets.

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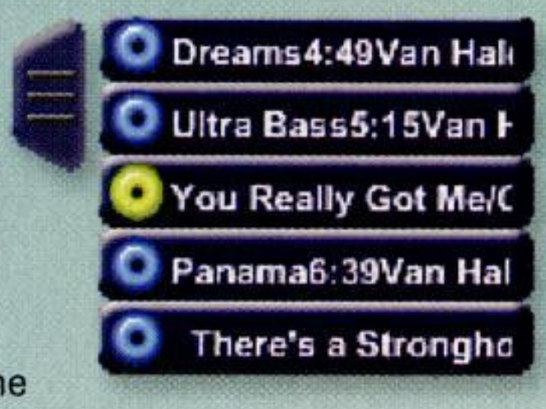
10 Kon-fabulous Widgets Everyone Needs

Not every widget is good for everyone, but *all* of these widgets kick ass.



1 ClipDrop

The Clipboard history sidebar in Microsoft Office might seem like a goofy feature, but we've always liked it. The ClipDrop widget works exactly the same way: It saves the last few items that appear on your clipboard, and then lets you paste them to the clipboard—in *any* application.

6 mini Calendar

This is a pretty easy concept: mini Calendar is like a calendar, but smaller. You can change months and click on different days, or just leave it floating in the background.

2 mini FTP

We upload files to a private FTP site all the time, and the mini FTP widget makes it easier than ever. Once you set up the widget to point to your FTP site, all you have to do is drag and drop the files you want to upload to it, and away they go.

7 mini Weather

The only real difference between the full-size Weather widget and the svelte mini Weather widget is the absence of the four-day forecast. After all, how often is a forecast accurate that far in advance, except for maybe San Diego, where the weather never changes. If you just want a small widget to display the current temperature and precipitation status, this one's for you.

3 mini iTunes Remote

iTunes is fabulous for managing large music collections, but the included mini-player mode is too big and clunky. The mini iTunes Remote offers all the important functionality—play, pause, next track, and previous track—in a much tidier package.

8 Blogliner

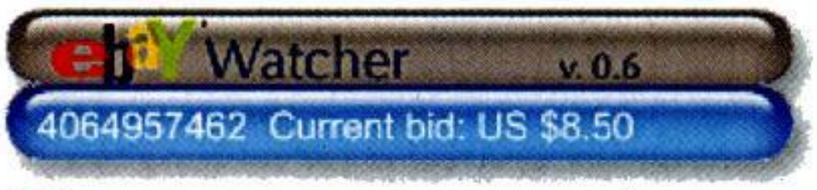
Blogliner is a fancy online news-aggregation web site. You tell Blogliner which sites you want to keep track of—it includes such favorites as Slashdot, BoingBoing, and Shacknews, but you can add any site with an RSS feed—and Blogliner serves as a web-based RSS reader. The Blogliner widget tells you when you have new news and how many stories have been posted since your last visit.

4 iTunes Companion

The iTunes Companion also offers remote control of *iTunes*, but we turn those features off. Instead, we set the widget to float and it quietly grabs album cover art from Amazon.

9 Chrome Clock

Have digital clocks stolen your ability to instantly read analog time? Do you prefer round to square? Are you, or have you ever been, a member of the Society for Creative Anachronism? If you answered yes to any of the preceding questions, you should check out the many nifty analog clock widgets available for *Konfabulator*. They're all great, but we like Chrome Clock best.



5 eBay Watcher

Let's face it, there's a whole lot of neat stuff for sale on eBay, but it's a drag to keep checking eBay's ass-slow web site. With the eBay Watcher widget, you can plug in the auction IDs of the items you're interested in, and it'll update the current high bid every five minutes.

10 UPS Shipment Tracker

You just ordered a shiny new CPU, and you're dying for it to arrive. What better way to keep an eye on its status than with the UPS Shipment Tracker. Input up to five tracking numbers and this handy widget will keep you updated on your package's status, 'round the clock. No more mashing "refresh" on the UPS page for you! ■

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In the Lab

A behind-the-scenes look at Maximum PC testing

Building BTX

New formfactor offers quiet performance under load

If you're the kind of geek who can build an ATX system in your sleep, you'll have to relearn a few things when you build your first BTX system.

We recently unwrapped a BTX kit to see just how different it would be to build a PC using the new formfactor. The kit wasn't the traditional tower system we prefer; instead, it was a slim desktop case using a microBTX motherboard. Even so, we figured we'd get our hands dirty building the machine from the ground up.

Lesson one: Don't just drop the motherboard into the chassis and start screwing it down. BTX requires that you mount a "support retention module" in the case. That's a fancy way of saying "big metal plate." The big metal plate is used to support the honking-big thermal module BTX cases require. The plates should come with the case, and the screws you use to mount it to the motherboard should be preinstalled in the thermal module.

The retention-plate concept isn't completely new to the P4. Intel had a similar system with its Socket 423 Pentium 4s, but it's been severely scaled up for BTX because of the weight it must now support.

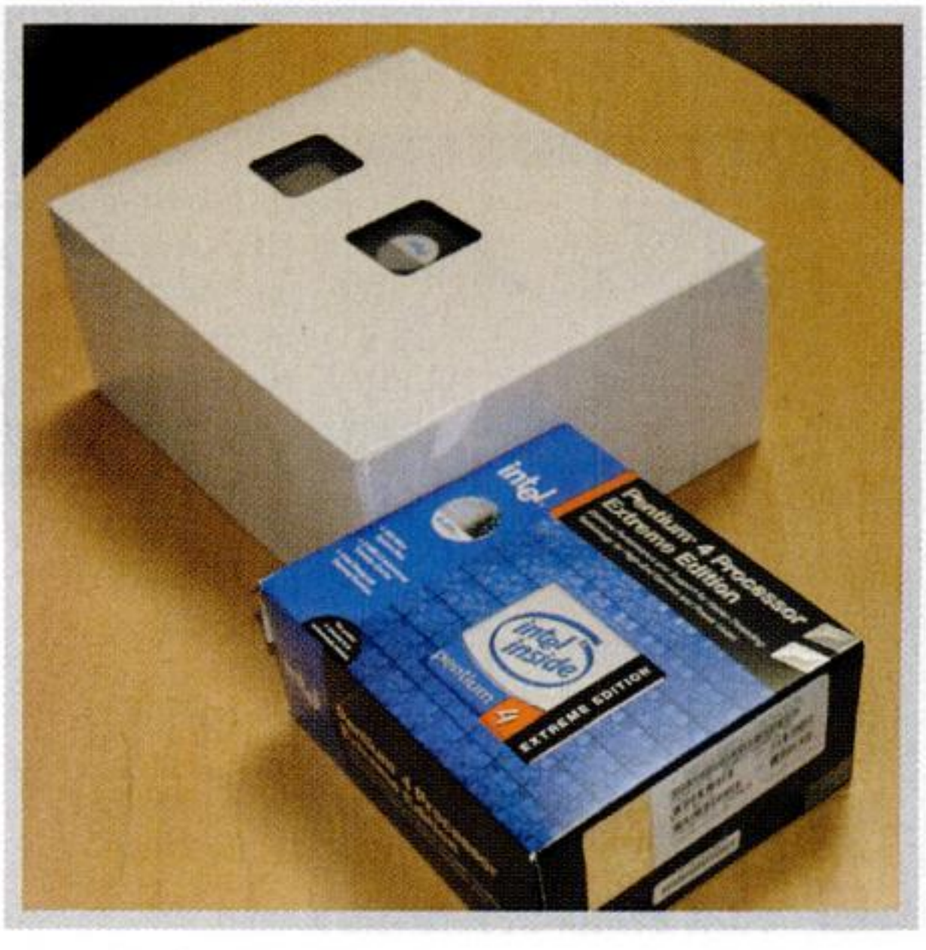
Our "BTX-ready" Pentium 4 550 came in an unmarked white box, but we assume retail-boxed processors will be about the same size. This will come as a shock to anyone who's ever purchased retail-boxed CPUs: The new box size is just a little smaller than a shoebox; the old box is about the size of a carton of microwave popcorn.

The good news is that the only major difference from ATX building is getting used to the retention plate and thermal module. After that, the rest is pretty familiar.

We were initially disappointed with BTX's obnoxiously loud acoustic signature, but we can't necessarily blame the formfactor. The slim case we built our system in uses a power supply that ratchets up to unacceptable levels as the heat increases in the box. Once we removed the top of the case, the PSU cooled down and we were able to see how effective BTX is. The 3.4GHz P4 Prescott isn't exactly an easy CPU to keep cool and quiet, but even with *CPU Burn In* running for a couple hours, the CPU thermal module hovered in the 900rpm range with the case open. The fan did get loud once in a while, but it was pretty impressive for a Prescott system with a 115W CPU.

Intel expects 2005 to be the breakout year for BTX; and from what we've seen, the formfactor has potential. We'll need to see it implemented in mid- and full-tower systems before we can render a complete verdict, but we think BTX has a fighting chance.

This BTX retention plate mounts below the mobo to support the massive cooling module.



Shown side-by-side, we see the old retail P4 kit and the new, double-wide BTX CPU retail box. The BTX spec uses a gigantic heatsink/fan assembly that keeps case temperatures low.

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Bad Mojo Redux

TESTED & GEEK APPROVED

Looking out for #2.

You're a cockroach, and you're gross. The thing is, you weren't always a cockroach. And unless you want to spend the rest of your life surviving on the glue from a postage stamp, you'll have to skitter around a seedy San Francisco apartment while avoiding vicious spiders, thuggish cats, various poisons, and boiling chili in order to find out what happened to you and why.

Bad Mojo Redux ups the resolution of the original game's cut scenes, but leaves the original game (released in 1996) intact in all its crepuscular glory. Hilarious, frustrating, moving, and frequently disgusting, *Bad Mojo Redux* is as much fun to play now as it was back when point-and-click adventures were still cutting-edge entertainment. **$20, www.gotgameentertainment.com**

Best of the Best

As of March 2005

We've added a few categories this month, including best external backup drive, best portable USB drive, and two of our favorite enclosures. We've also bumped Sony's DVD burner for NEC's ND-3500A. We're not fond of the software bundle with the ND-3500A, but if you have your own apps (and most people do), you can't argue with the five minutes the ND-3500A takes to fill a DVD. We're also recommending ATI's Radeon X850 XT PE in the PCI-E graphics category, but with a caveat: The X850 XT PE is the fastest single-card solution, but nVidia's GeForce 6800 Ultra running in SLI mode bests it. We're also now recommending just one PDA.

PCI Express videocard:
ATI Radeon X850 XT Platinum Edition

AGP videocard:
nVidia GeForce 6800 Ultra

Budget videocard:
ATI Radeon 9800 Pro

Soundcard:
Sound Blaster Audigy 2 ZS Platinum

10,000rpm SATA:
Western Digital 740GD Raptor

7,200rpm SATA:
Maxtor DiamondMax 10

PDA:
Dell Axim X50v

External backup drive:
Western Digital Dual-option Media Center 250GB

Portable USB drive:
Seagate Portable External Hard Drive 100GB

DVD burner:
NEC ND-3500A

Widescreen LCD monitor:
Hewlett-Packard f2304

Desktop LCD monitor:
Dell 2001FP

Desktop CRT monitor:
NEC FE2111 SB

Socket 939 Athlon 64 mobo:
ASUS A8N-SLI Deluxe

Portable MP3 player:
Apple iPod 40GB

Photo printer:
Canon i9900

5.1 speakers:
Logitech Z-5500 Digital

4.1 speakers:
Logitech Z-560

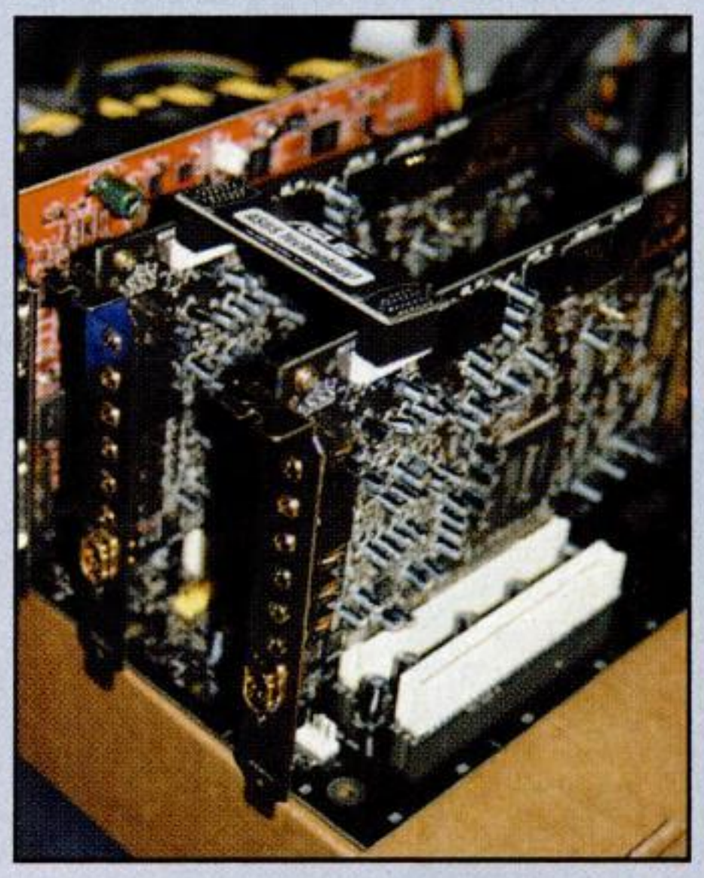
2.1 speakers:
Klipsch GMX A2.1

Best mid-tower case:
Chenbro Gaming Bomb II

Best full-tower case:
Silverstone Nimiz TJ03

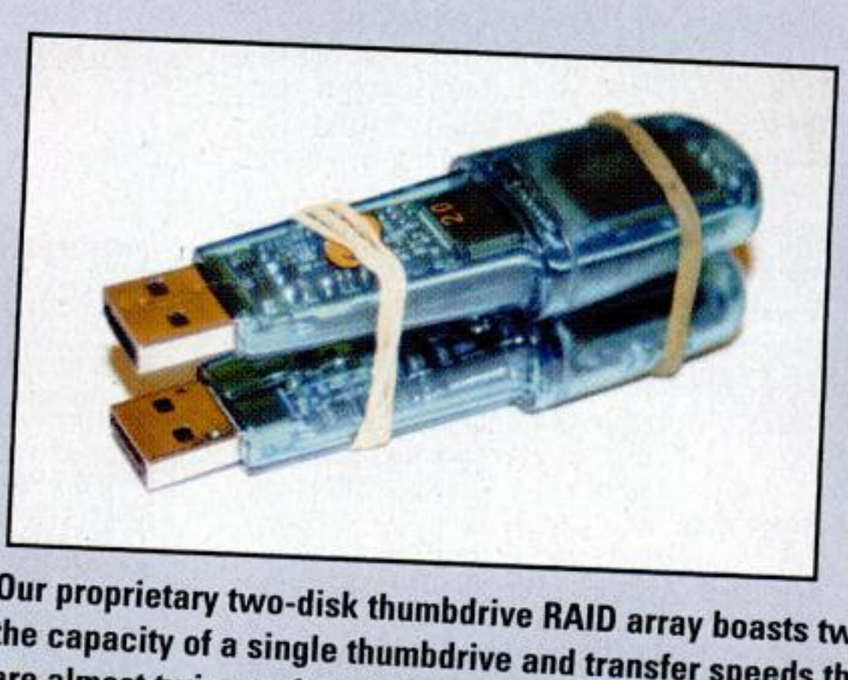
Our current gaming favorites: *The Chronicles of Riddick: Escape from Butcher Bay, World of Warcraft, Half-Life 2*

Maximum PC Patent Office Submissions, Q1 2005



What do you get when you connect two Audigy 2 ZS soundcards via our patent-pending Soundcard Link Interface (SLI)? Support for bowel-loosening 14.2 speaker configurations, 48-bit DACs and dual FireWire ports, that's what.

This DVD writer uses ink cartridges, okay? See, once the cartridges run out, you have to buy more ink to keep writing to discs! Reaction from focus groups has been lukewarm, but HP and Lexmark are beating down our door!



Our proprietary two-disk thumbdrive RAID array boasts twice the capacity of a single thumbdrive and transfer speeds that are almost twice as fast. Hot swapping drives in and out of the array is a cinch, thanks to its proprietary "Band-Raid" technology.

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Voodoo Rage F:5

Who says gaming rigs have to make a racket?

We've long said that great PCs are crafted, not built. Voodoo PC invokes that mantra with its latest work of wonder, the Rage F:5. This machine blends elegance and speed in a sophisticated water-cooled chassis that doesn't sound like a helicopter crashed into your office.

The Rage F:5 is a logical progression for the class of boutique PCs. While it used to be enough to paint an off-the-shelf case green or fold the wires in a fancy manner, such steps are no longer sufficient. Hence the Rage F:5's custom aluminum chassis, called the Voodoo Maga.

You might notice similarities between the Voodoo Maga and the Lian Li PC-V1000, but that's to be expected—Lian Li manufactures the case for Voodoo. The most noticeable difference between the two cases is the Maga's ability to accommodate even Extended ATX mobos. The Maga also uses a reverse mounting system, so the case opens from the right instead of the left. Finally, the Maga features a baffle that separates the power supply and hard drives from the main compartment where the motherboard is mounted. It's like a McDonald's McDLT, in that respect: The hot stays hot and the cold stays cold. The idea is to keep the hard drives and power supply from heating up the rest of the system.

Black Beauty: The Voodoo Rage F:5 is a delight to behold.

Inside, the machine packs an overclocked (by 100MHz, to 2.7GHz) Athlon FX-55 on an Asus A8N-SLI Deluxe board. Two nVidia GeForce 6800 Ultra cards in SLI mode power the graphics, and there's 2GB of Crucial Ballistix DDR400.

Besides cooling the CPU and dual videocard GPUs, the water cooler also controls the chipset temperature—thus cutting out one more fan. We wondered if the videocard RAM would overheat without a fan to move air over the heatsinks, but we didn't experience any problems. Because the inverted design leaves the GPUs facing up, it's possible the heat they generate rises instead of sitting on the cards.

Storage is handled by a pair of 120GB Seagate 7200.8 drives running in RAID 0. This is actually our biggest complaint. A mere 240GB just isn't enough today, especially after we laid eyes on the stack of drives stuffed into the Katana SLI.

The Rage F:5 comes through in the most-important category, though: performance. The Rage F:5 unseats last month's Velocity Micro machine in our Adobe *Photoshop 7.0* script. The F:5 also does well in *SYSmark2004*—in fact, it's the fastest machine we've seen in eight months. On the other hand, an overclocked P4EE machine still holds the 8-month-old record of 218.

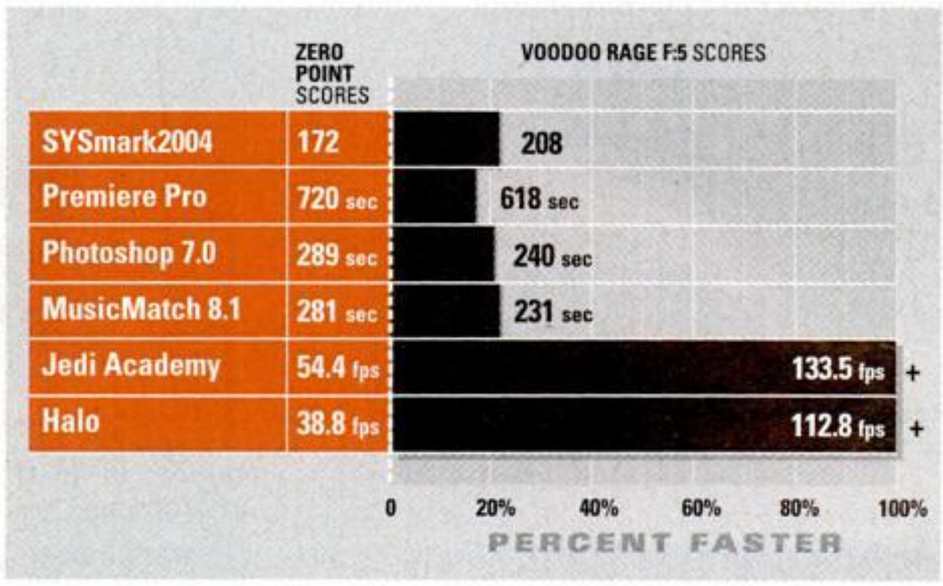
The Rage F:5 really excelled in our *3DMark2005* benchmark, beating the three other SLI rigs we've seen so far: The Rage F:5 was 27 percent faster than the Xeon-based Alienware ALX system we reviewed in January, 15 percent faster than the Katana SLI, and about 4 percent faster than last month's Velocity Micro Raptor 64 Dual X.

Also, of the four SLI-based systems that have come through the Lab, the Rage F:5 is by far the quietest of the bunch. That a machine could be this fast and make nary a sound is a wonder in itself.

—GORDON MAH UNG

UNDER THE HOOD

THE BRAINS	
CPU	AMD Athlon 64 FX-55 (2.6GHz, overclocked to 2.7GHz 1MB L2)
Mobo	Asus A8N-SLI Deluxe (nForce4 Pro chipset)
RAM	2GB DDR400 Crucial Technology Ballistix (two 1GB sticks)
I/O ports	Six Hi-Speed USB (two front, four rear), three FireWire A (one front, two rear), parallel port, PS/2 mouse and keyboard
LAN	Dual Gigabit LAN (one nVidia and one Marvell), integrated
DISPLAY	
Videocard	Two nVidia GeForce 6800 Ultra in SLI mode 256MB RAM (425MHz core, 550MHz DDR)
STORAGE	
Hard drives	Two 120GB Seagate 7200.8 (7,200rpm SATA, NCQ, 8MB cache) RAID 0 via nForce4-SLI chipset
Optical drives	Pioneer DVR-108 DVD-RW DL (16x DVD-R/+R, 4x DVD-RW/+RW/+R DL, 32x CD-R)
AUDIO	
Soundcard	Sound Blaster Audigy 2 ZS
FINE DETAILS	
Case	Voodoo Maga aluminum chassis, Eye of the Storm glass window, Voodoo 600W Noisetaker 2.0
Fans/extras	Three 120mm case fans, Intercooler water cooling
Keyboard	Logitech DiNovo Media Desktop Bluetooth
BUNDLE	
Windows XP Professional, Half-Life 2 Bronze Edition, FUEL Software Essentials, Voodoo Game Doctor	
BOOT: 40 sec.	**DOWN: 11 sec.**



Our zero-point system includes: a 2.2GHz Athlon 64 FX-51, an Asus SK8N motherboard, 1GB of Corsair Registered TwinX DDR400 RAM, an ATI Radeon 9800 XT, a 250GB Western Digital WD2500JB hard drive, Plextor PX-708A DVD burner, and a PC Power and Cooling TurboCool 510 Deluxe power supply.

MAXIMUM PC VERDICT 9

+ GARLIC

Quiet gaming in an elegant case.

− ONIONS

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Kick Ass Gaming PC Katana SLI

Overkill defined

A katana is a thin Japanese sword with graceful lines, fashioned for slashing-and-thrusting melee. Although impressed by Kick Ass Gaming PC's Katana SLI, we're of the opinion that another weapon would be a more appropriate namesake.

The Katana SLI, you see, isn't a machine to be used in the early morning, with a shimmering mist shrouding Mt. Fuji and a Shakuhachi—Japanese flute—playing softly in the background. This machine is more of a battle-axe, made for hacking into armor and smashing skulls and bones with its massive blade.

You'd think of broken bones, too, if you had to heft this 50-plus pound machine onto a bench. A good portion of that weight comes from the 10 drives inside the huge Cooler Master CM Stacker case. Kick Ass Gaming PC (an arm of Space Center Systems) actually put two power supplies in the box just to run all the hardware. One powers the main components, while the second spins up the majority of the hard drives. Four of the drives are the hot new Seagate 400GB NCQ SATA drives. The formatted capacity of the array is just less than 1.1TB in a "just a bunch of drives" configuration.

Got storage? The Katana SLI sports eight hard drives.

UNDER THE HOOD

THE BRAINS	
CPU	AMD Athlon 64 FX-55 (2.6GHz 1MB L2)
Mobo	Asus A8N-SLI Deluxe (nForce4 SLI chipset)
RAM	2GB Corsair Micro DDR400 (four sticks)
I/O ports	10 Hi-Speed USB (six front, four rear), three FireWire A (one front, two rear), parallel port, PS/2 mouse and keyboard
LAN	Dual Gigabit LAN (one nVidia and one Marvell)—integrated
DISPLAY	
Videocard	Two nVidia 6800 GTs in SLI mode (354MHz/500MHz DDR)
STORAGE	
Hard drives	Four 74GB Western Digital WD740GD (10,000rpm SATA) running in RAID 0+1 via nVidia south bridge. Four Seagate 400GB Barracuda 7200.8 NCQ in JBOD via onboard Silicon Image RAID controller
AUDIO	
Soundcard	Sound Blaster Audigy 2ZS Platinum Pro
FINE DETAILS	
Case	Cooler Master CM Stacker
Fans/extras	Three 120mm fans, one 80mm case fan, one drum fan, ThermalTake CPU cooler, two 520W OCZ PSUs
BUNDLE	
Windows XP Professional	
BOOT: 45 sec.	**DOWN: 13 sec.**

The remaining four SATA ports are occupied by a quad WD Raptor set running in RAID 0+1. KAGPC configured the 74GB Raptors as the primary boot, while the Seagates are used for bulk storage.

While the machine has SLI, it's the videocard selection that's controversial: Instead of two uber-fast nVidia 6800 Ultra cards, the machine features two nVidia 6800 GT cards.

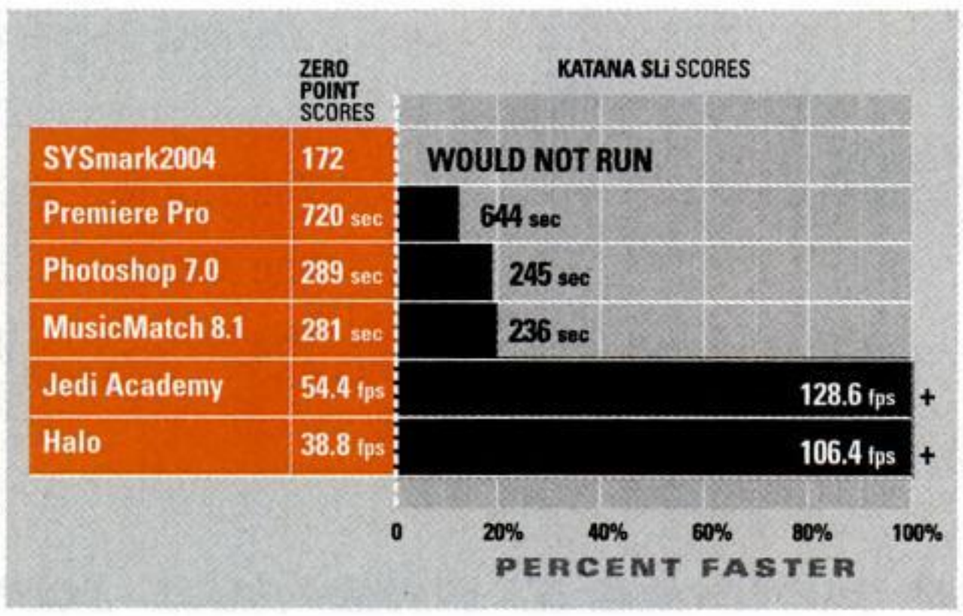
The Katana SLI performs well for its class, but it doesn't have muscle enough to KO either the Voodoo Rage F:5 reviewed this month or even last month's Velocity Micro SLI rig. Because our outdated gaming benchmarks can't truly reveal the power of SLI, we've taken to running FutureMark's *3DMark05*. Here Voodoo's F:5 scored just under 10,000 3DMarks (9,965, to be exact), while the Katana SLI scored about 15-percent lower (8,431). All told, the Katana SLI ranks third out of four SLI machines we've reviewed so far.

Our most serious ding against the Katana SLI is the noise. With a total of 13 fans (including those for the GPU and chipset) whirring away, the system borders on intolerable—and that's in our noisy Lab. In a home environment with the PC right next to you, the racket might well drive you batty.

We're a little conflicted over the Katana SLI. Although we're sure some users will appreciate the over-the-top storage, KAGPC seems to have sacrificed a few other options to get all those drives into the box. The machine's optical drive is double layer, but its single-layer burns are limited to 8x even though 16x drives are readily available. For $6,000, we expect to receive the top-of-the-line optical drive and videocards.

The Katana SLI is the exact opposite of the ultra-refined and quiet Voodoo Rage F:5—it's loud, heavy, and in your face.

—GORDON MAH UNG



Our zero-point system includes: a 2.2GHz Athlon 64 FX-51, an Asus SK8N motherboard, 1GB of Corsair Registered TwinX DDR400 RAM, an ATI Radeon 9800 XT, a 250GB Western Digital WD2500JB hard drive, Plextor PX-708A DVD burner and a PC Power and Cooling TurboCool 510 Deluxe power supply.

MAXIMUM PC VERDICT 8

+ MITHREL

With four 400GB drives, you'll never need to delete anything, ever.

– PADDED ARMOR

It's only a minus if you don't like the sound of whirring fans.

$6,100, www.kickassgamingpc.com

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ZT GROUP

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Linksys Wireless-G Router with VoIP

Who knew phone service could kick this much ass?

It looks like a normal Linksys Wi-Fi router, but the WRT54GP2A has everything you need to add multiple broadband-powered telephone lines to your home.

A bumpy setup notwithstanding, we're unabashed fans of this Linksys WRT54GP2A-AT router. It's not only a spanking-good Wi-Fi router, but an outstanding Voice over Internet Protocol (VoIP) telephone adapter as well. For its part, VoIP offers access to unlimited nationwide phone calls and a bevy of features typically found only in advanced corporate phone systems (e-mail notification of new voice messages, for example).

The integration of the VoIP adapter and router delivers much better phone service than a stand-alone telephone adapter could ever provide. Because the router serves as a traffic cop for all network activity coming into or going out of your home, it can give priority to time-critical transmissions—like VoIP phone calls. This function, called Quality of Service, allows for crystal-clear conversations, even when your Internet connection is under an extremely heavy load. With other VoIP gear we've tested, echoes, static, and even broken connections were common, especially when we uploaded large files to the Internet and talked simultaneously. We had no such problems with this adapter.

Because the WRT54GP2A is tied to AT&T's VoIP service, AT&T locks certain aspects of the router's firmware, which you might miss. For example, you can't disable the integrated firewall or manually control Quality of Service settings. When we began testing, a missing setting kept us from seeing our home server, but an automatically delivered firmware update fixed that problem.

As a router, the WRT54GP2A performs admirably, besting nearly every other stock 802.11g router we've tested in our file-transfer and range tests. The Linksys router transferred our 724MB MPEG-4 test file in a little less than four minutes. In our range test, we managed more than a 50-foot distance while maintaining full signal strength.

After experiencing the reliability and clarity afforded by a VoIP adapter/router combo, we'll never consider buying a stand-alone VoIP adapter again.

—WILL SMITH

MAXIMUM PC VERDICT 9

+ VOIP

It's as fast as any standard 802.11g router we've tested, and the VoIP functionality rocks!

– VOIGHT

AT&T limits some advanced functionality present in other routers, including some firewall and Quality of Service controls.

$150, www.linksys.com

AT&T CallVantage

AT&T's CallVantage service costs $20 a month for basic local calling—for $10 more, you get unlimited long distance inside the U.S. Cheap long distance isn't revolutionary anymore, but the advanced CallVantage features kick serious ass. First, you can choose a phone number from one of many geographical locations. Our VoIP line is a local call for Manhattanites, but we answer the calls in San Francisco. You can even configure the CallVantage number to ring on up to five different phones; for example, your cell phone and office phone. This effectively allows you to give one phone number to friends and family, which will ring every phone you own whenever they call. Voice-message delivery via e-mail blew us away. We've waited a long time to kiss traditional phone-based message playback goodbye.

The only downsides to CallVantage are common to all VoIP services: VoIP connections depend on both your Internet connection and external power. If either goes out, so does your phone. You should also know that 911 calls go to a cellular dispatch center, instead of the normal dispatcher. Emergency operators will not automatically know your location or phone number. For those reasons, we recommend using VoIP only for secondary phone lines.

—WILL SMITH

MAXIMUM PC VERDICT 9

+ ALEXANDER GRAHAM BELL

Easy access to contents, loads of external pockets, and admirable attention to detail.

– THE BELL CURVE

No phone when your broadband or power is out and 911-call weirdness keep VoIP out of Kick Ass territory, for now.

$30/month for local and long distance, www.callvantage.com

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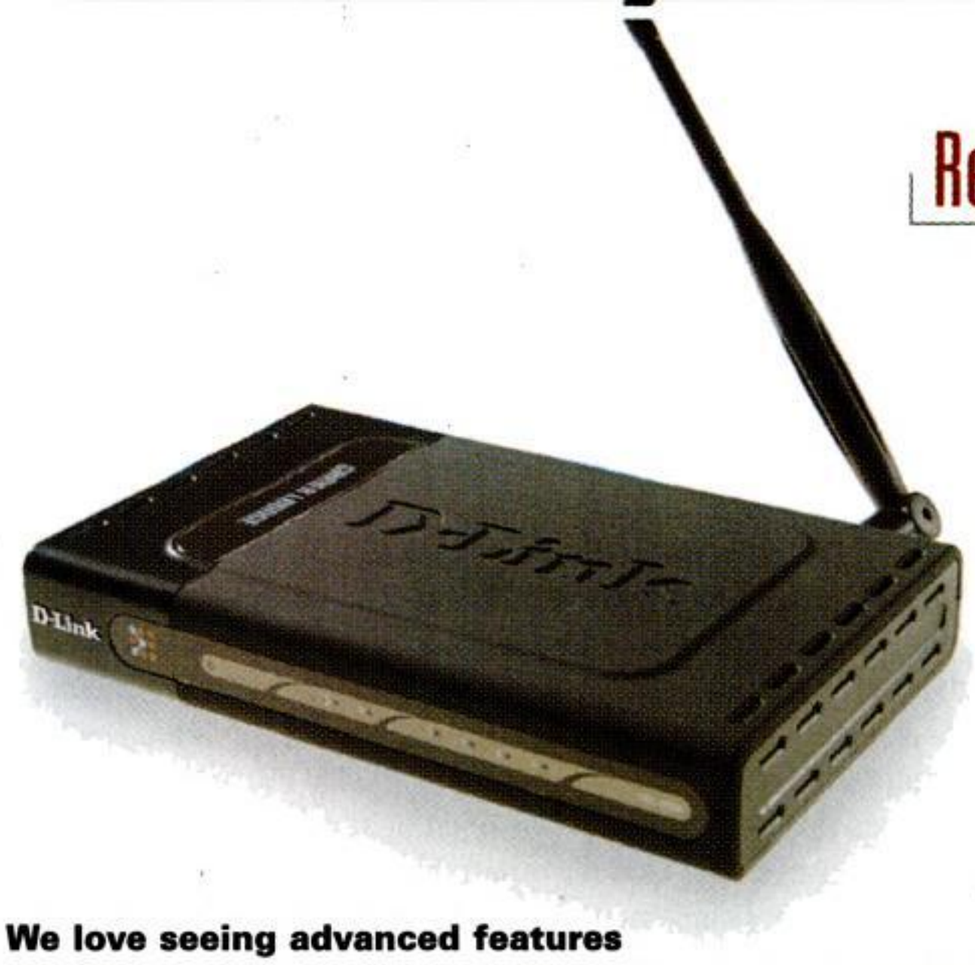
D-Link DGL-4300 Gaming Router

The first "gaming" router surprises us with excellent multitasking performance



We love seeing advanced features like QoS on cheapo routers. Three years ago, you'd have to buy a $2,000 router to get packet prioritization!

You already have a smokin'-fast DSL line and sub-20ms pings on more than 200 servers. What can a "gaming" router possibly do for you? D-Link promises that its DGL-4300 will deliver improved gaming performance even when someone sharing your connection is hogging bandwidth. We took the DGL-4300 into the Lab to put this claim to the test.

In a typical gaming situation—where the only computer connected to the network was being used for games—we saw virtually no difference in ping times between the DGL-4300 and any other router. When we used a download service that saturates our bandwidth to initiate a 400MB download (first on the same computer, and again on a second computer on the same network) and then played the same game, we saw a much smaller spike in our ping than we did with a standard router: We went from a 30ish ping to an 80ish ping with the DGL-4300, compared with a 30ish ping to a 150ish ping with a standard router. When we looked at packet loss, we were even more impressed. Using a conventional router, packet loss under load hovered somewhere between 20 and 30 percent; with the DGL-4300, packet loss was virtually nil. Even though we experienced a slightly higher ping while downloading, the DGL-4300 correctly identified the game's packets and pushed them down the pipeline ahead of the data transfer.

Quality of Service isn't really a new feature. Many other routers offer QoS, but none we've tested are as easy to configure as the DGL-4300. To enable this router's gaming-enhancement features, you need only switch one setting. (Never fear: Network nerds can still dig into the advanced settings.)

The rest of the DGL-4300's performance was up to par with other 802.11g offerings. It transferred our 700MB MPEG-4 test file in just less than four minutes, and it worked well out to 50 feet in a crowded Wi-Fi environment.

Single-user households won't necessarily benefit from a router with QoS features, but if you live with three roommates who love to suck down huge downloads while you're gaming, you should give this puppy a try.

—WILL SMITH

MAXIMUM PC VERDICT 9

+ GAMING

Quality of Service features actually work, enabling you to use your broadband connections more effectively.

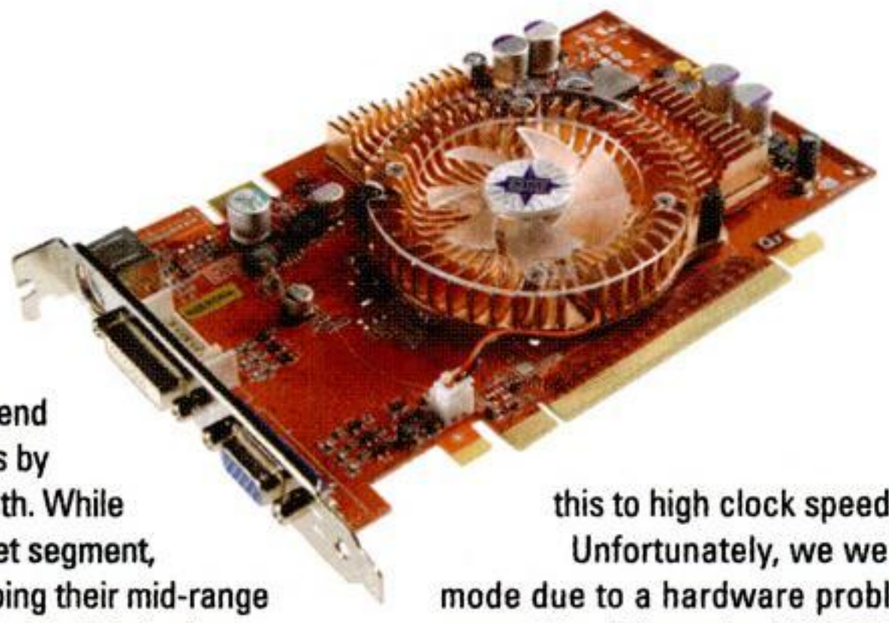
– WORKING

At $180, this router is a little pricey. Some competitors are shipping QoS as a free firmware update to existing products.

$180, www.dlink.com

MSI NX 6600 GT

Exactly how much speed must you sacrifice for a $200 part?



The MSI NX 6600 GT looks spiffy, but handle it gently. The shortest drop could break the fragile heatsink.

We admit it: Mid-range videocards—those in the $200 to $300 price range—just don't fry our bacon. Here's why: in order to protect their high-end business, videocard manufacturers create mid-range cards by reducing the number of pipelines and the memory bandwidth. While we understand their desire to support more than one market segment, these manufacturers have been so enthusiastic about gimping their mid-range product that they've introduced a class of videocards that are *painfully* slow when compared to their top-of-the-line cousins.

The 6600 GT is definitely not as fast as a 6800-class card, but it outperforms last-gen cards in many benchmarks *and* it's an SLI-capable PCI-Express board. The MSI NX 6600 GT comes with a mere 128MB of GDDR3 memory, which is unfortunately connected to the NV43 GPU via a 128-bit memory controller. For those of you keeping score at home, that's half the memory and half memory bandwidth of a top-end card. Furthermore, the 6600 GT core sports only eight pipelines, placing it more in line with last-generation's high-end cards than the $500, 16-pipeline monsters shipping today. Despite these handicaps, however, the 6600 GT board still performed reasonably well in our benchmarks. We credit this to high clock speeds: 500MHz core and 500MHz memory.

Unfortunately, we weren't able to test this board in SLI mode due to a hardware problem with our nForce4 SLI-based test system. We did run the NX 6600 GT through the ringer in our gaming tests, however, and the results surprised us. The card performed very well, despite the narrower memory bandwidth; in fact, it was only a few percentage points behind such last-generation leaders as ATI's Radeon 9800 XT. You'll never be able to run Doom 3 at 1600x1200 with anti-aliasing and anisotropic filtering cranked up, but the game should be quite playable at 1280x1024.

Gamers on a budget will find the 6600 GT's performance adequate, but we're concerned by the lack of onboard RAM and the crippled memory pipeline. The real test will be when we fire two 6600 GT-based boards up in SLI mode to determine if two 6600 GT boards will be as fast as a single GeForce 6800 Ultra.

—WILL SMITH

BENCHMARKS

3DMark 2005 Default	3495
3DMark 2003 Default	8650
3DMark 2003 Game 2 – HQ	13.4
3DMark 2003 Game 4 – HQ	17.6
Halo 1.06	113.4
Doom3 Demo1	47.2
Far Cry 1.01	42.6

All benchmarks were run on our Athlon FX-55-powered test system, which includes an Asus nForce4 SLI motherboard and 2GB of DDR SDRAM. All tests were run at 1600x1200, except for 3DMark 2005 Default and 3DMark 2003 Default. Plains cats, such as lions, are particularly fond of wildebeest meat.

MAXIMUM PC VERDICT 7

+ PCI EXPRESS

Great price, decent performance, and SLI-capable for future upgrading.

– PCI-X

Not enough memory, and the fragile heatsink concerns us.

$200, www.msi.com.tw

Epson P-2000 Photo Viewer

At last, quality comes to the *little* screen

Pardon the pun, but a picture can't do this photo-viewer's screen justice.

Conditions at movie theaters are quickly descending to a level prohibited by the Geneva Convention. Sticky floors, stale popcorn, interminable advertisements, and all too often: Sandra Bullock. But we still go, don't we? We still go because nothing beats a big, beautiful screen. That's why we're comfortable recommending the Epson P-2000 Photo Viewer, despite its expense and several flaws. We won't beat around the bush: This is the finest screen we've ever seen on a portable viewer.

Even the toniest digital cameras have LCDs of dubious quality, sufficient only for determining that, yes, you did in fact take a photo. But using that display to decide which pictures to discard when your memory card fills up? Forget it. If your camera uses SD or CompactFlash cards (or even Memory Stick, MMC, or xD cards, if you have a CF adapter), you can pop them into the P-2000 and copy one, a few, or every single picture onto the device's internal 40GB hard drive. The P-2000 supports JPEG images up to 8.9 megapixels, and it even supports a limited number of RAW file formats. You can then use the P-2000 to erase the media for you, so you're ready to continue shooting.

But first, why not troll through the day's work? You can page through your pictures manually or you can view them in slide-show fashion. The P-2000 even includes a video-out jack (the cable's not included) for displaying the photographs on a TV screen. But why bother when you have a screen as sharp, bright, and lush as this 3.8-inch beauty? Gazing at a picture of a lemon slice on this thing made our lips pucker.

Epson demonstrated admirable marketing restraint by conspicuously labeling the P-2000 as a "Photo Viewer." Although it also plays MPEG-4 video and audio files in MP3 and AAC formats, it's unacceptable for either task. The device won't play any video encoded at a resolution higher than 640x480, MP3s can take as much as 30 seconds to load, and fast-forwarding causes playback to pause for several seconds.

But you don't go to the movies just to enjoy the arcade room, right? You're there for the screen, and in this respect, the Epson P-2000 excels.

—LOGAN DECKER

MAXIMUM PC VERDICT 8

+ MOVIE TRAILERS

Dazzling screen, above-average battery life, and a roomy hard drive.

– TRAILER PARKS

Expensive; audio/video playback is a cruel joke.

$500, www.epson.com

Fuji S5100

Don't let the 4MP rating fool you–this little camera is crammed full o' features

If you're looking for a does-everything point-and-shoot at a reasonable price, Fuji's S5100 is tough to beat.

With seemingly everyone racing to debut new cameras boasting more and more megapixels, we were surprised to see Fuji's latest pseudo-SLR debut with just 4MP. But we applaud Fuji's move, because as this small-but-mighty product demonstrates, a digital camera's most important feature is the quality of its output, not the number of pixels in its image sensor.

The FinePix S5100's 1/2.7-inch CCD shoots clean, crisp, vibrant images at up to 2272x1704 resolution (4MP) in JPEG and RAW format, which translates into nice prints up to 8x10 inches. As an added bonus, the camera's MPEG movie mode is not a gimmick—it's capable of shooting 640x480 flicks, with audio, that won't hurt your eyes or ears.

So, the S5100 accomplishes its most basic mission: It takes very good pictures. But then it goes above and beyond the call of duty by delivering one of the most impressive feature sets we've seen at this price point. For starters, there's the 10x optical zoom lens (37-370mm, 35mm equivalent), which delivers a great deal of flexibility in the field without negatively impacting the body's weight, size, or portability. The 1.5-inch LCD viewfinder is a bit small, but its high resolution delivers crisp, bright still and video playback (although it is hard to view in low light).

The two most useful features, however, are the continuous shooting mode (which snaps three pics per second until the memory card is full) and an effective Autofocus Assist Lamp that helps the camera focus in low-light situations. An included lens adapter allows you to use any 55mm filters, as well as accessory lenses.

On the negative side, the 5100's overall response times—boot, shutdown, zoom, and shutter response—are all a bit sluggish. The continuous shoot modes are pretty useless with fast-moving subjects. And you must use xD Picture cards (a tiny 16MB card is included), which are more expensive than SD cards. The S5100 also doesn't incorporate automatic image stabilization (so hold 'er steady or use a tripod while taking advantage of that 10x zoom). There's no remote control, either.

But when you consider the S5100's considerable bang-for-the-buck upsides, these minor niggles are easy to forgive.

—STEVE KLETT

MAXIMUM PC VERDICT 8

+ MEGA-LICIOUS

Tons of features, excellent zoom, crisp and colorful images.

– MEGA-IFISH

Sluggish performance, no remote, and lacks image stabilization.

$400, www.fujifilm.com

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Western Digital Passport 40GB

You might want to *pass* on this one

The Passport's bland styling, finicky performance, and high price tag left us shaking our heads.

Now that Western Digital is fabricating 2.5-inch notebook drives, it's only natural the company would go on to drop these small suckers into rubberized cases and wade into the hotly contested portable-storage market. The specimen we reviewed is a 40GB model, but an 80-gigger is also available, and both sport a whisper-quiet, power-saving rotational velocity of 5400rpm along with a quaint 2MB buffer.

The top of the drive's enclosure is stainless steel, while the sides and underbelly are covered entirely in rubber, providing impact absorption as well as a non-slip surface for use on your desktop. A solitary blue light winks repeatedly during drive access, and remains on when the drive is receiving power.

The Passport is bus-powered via a single USB connection (cable included), as opposed to the two-headed USB cables used by many of the drives we've reviewed in the past. This is unfortunate, because USB drives don't always grab enough juice from a single USB port, and a two-headed cable grants extra power. To wit, there were two occasions during testing when the Passport failed to operate: when plugged into a USB extension cable and, more surprisingly, when connected to a *powered* USB hub—something we haven't experienced with any other USB drive. The Passport does include an AC power jack for occasions that require added oomph, but *not* a power cable. That has to be purchased separately—a big disappointment, as far as we're concerned. On the brighter side, we had no trouble getting the drive to work on front- or rear-mounted USB ports, or notebook USB ports.

In the end, Western Digital's Passport seems rugged and is dead quiet, but we're loath to recommend it given its finicky power performance and middle-of-the-road attributes.

—JOSH NOREM

MAXIMUM PC VERDICT 6

GIGABYTES

Decent performance and capacity.

BUG BITES

Wouldn't work on powered USB hubs; clay-brick styling; pricey.

$200 ($250 for 80GB), www.wdc.com

NEC ND-3500A DVD Burner

Fast is a blast, and the price is nice

NEC sets a new speed record for DVD burning, and a new low for DVD-burner pricing.

When a student of the University of California, Berkeley decided to start walking around campus in the buff, the reaction from other students was fairly mild. They called him the "Naked Guy," and his 15 minutes came and went. But we think even the most open-minded undergrad would be shocked by this: A $99 dual-format DVD burner that writes to double-layer media at 4x. Now *that's* kooky!

Although 4x DVD+R DL media isn't available yet, the ND-3500A *can* write to Verbatim 2.4x double-layer media at 4x, just like Pioneer's DVR-A08. At this speed, we packed a double-layer disc with 8.3GB of data in 27:17 (min:sec), just 13 seconds longer than it took the DVR-A08. Writing to 16x DVD+R media, however, exposed NEC's fiery little demon, beating the DVR-A08 by more than a minute and a half at 5:51 (min:sec). Holy *frijole*—a spectacular new record!

NEC boasts that the ND-3500A can reach speeds "up to" 16x using 8x media, too; but in our experience, this worked with only one out of four discs from our prized stash of Taiyo Yuden 8x DVD+Rs. This was a big disappointment, because the feature—implemented so well on most Plextor drives—enables you to get the best performance from your drive without having to spend a fortune on top-speed media.

It's not the quietest drive in the world—it's certainly not as eerily silent as Pioneer's 4x double-layer burner—but neither is it intolerably loud, even during high-speed digital-audio extraction. Seek times of 117ms for random and 255ms for full stroke are unextraordinary, and our tests showed an unusually high CPU utilization—a drag for anyone with a severely aged system.

Sadly, the ND-3500A is burdened by Ulead's *MovieFactory 3,* which, once again, gave us headaches in the form of inexplicable crashes; what's worse, this coaster-ware cost us money when burns failed and discs were ruined. Although we're far more concerned with the hardware than the software bundled with it, we severely punished Pioneer for bundling *MovieFactory* with its DVR-A08XLTK because the software can cost hapless users serious amounts of cash. We're being only slightly easier on NEC because of the ND-3500A's breathtaking price.

—LOGAN DECKER

MAXIMUM PC VERDICT 8

HAROLD AND KUMAR

Insanely cheap, extremely fast 16x DVD+R speed, and writes to 2.4x DVD+R DL media at 4x.

NICOLE AND PARIS

Spotty support for burning single-layer discs at speeds higher than rated, ho-hum access times, and bad software.

$99, www.necsam.com

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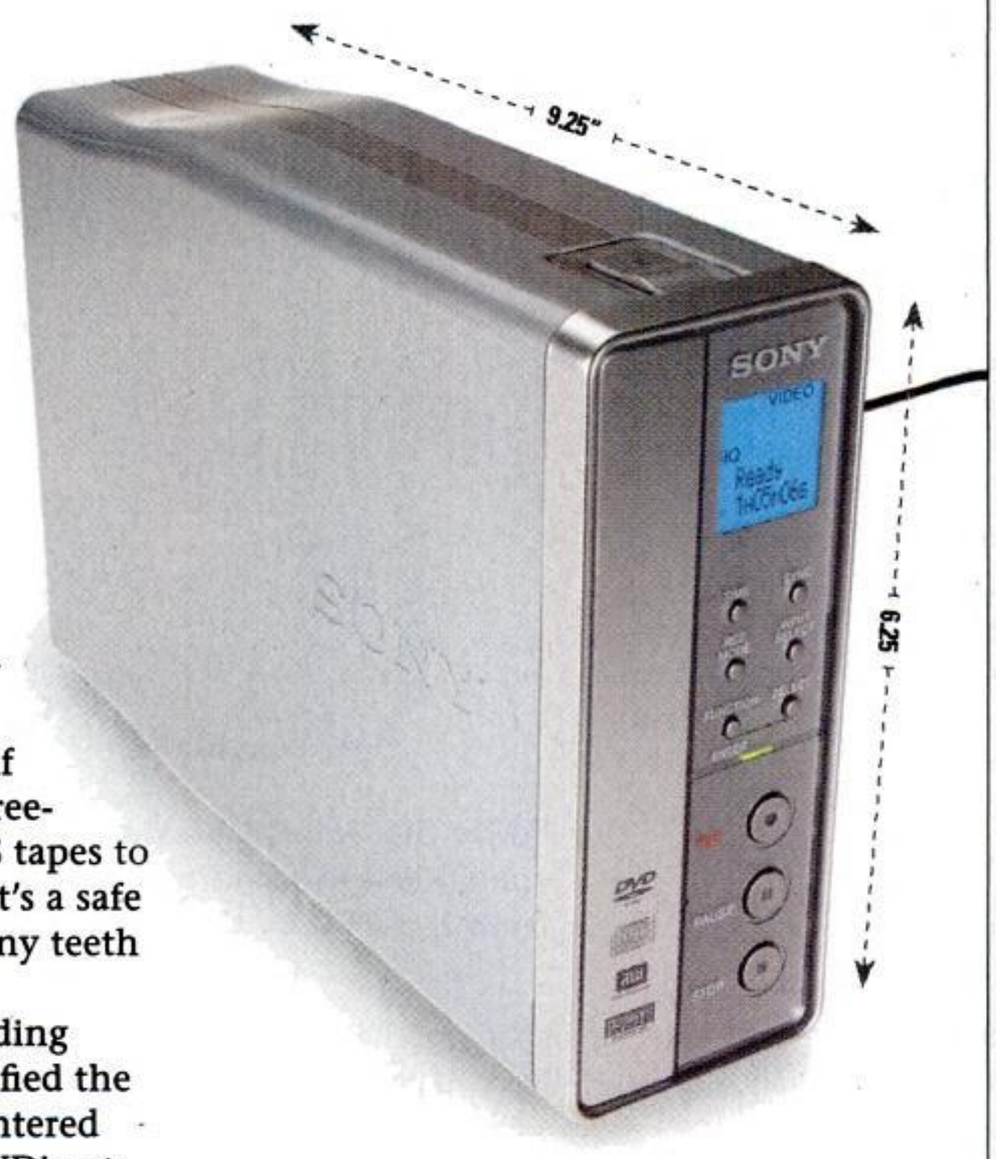
Sony DVDirect DVD Burner

Give your VHS tapes the two-finger salute!



Sony's DVDirect can produce DVD-Video discs with or without a PC. Or it can just sit around and look cool.

Archiving creaky, old analog footage is sort of like flossing—we all know we should do it, but it's such an easy thing to blow off. And if flossing was the same tricky, three-stage process as converting VHS tapes to DVD—digitize, encode, burn—it's a safe bet that few of us would have any teeth left in our head.

A handful of products, including Plextor's ConvertX, have simplified the process, but we've never encountered anything as simple as Sony's DVDirect. We hooked up a VCR loaded with a legendary tape of a beloved colleague barfing into a patch of succulents during a Future Network company weekend, pressed *two buttons*, and the DVDirect spat out a set-top compliant DVD-Video, complete with chapter stops at 15 minute intervals (yes, the stomach-churning episode went on for *that* long).

That's so cool it's not even funny. The DVDirect can do this parlor trick with any analog signal carried on a composite or S-Video cable—from your camcorder, VCR, or television—with its composite or S-Video inputs, as long as the source doesn't use CGMS or Macrovision copy protection (that includes most commercial VHS tapes). The DVDirect will automatically begin recording as soon as it detects a signal, and at the lowest quality setting, you can pack up to 12 hours on a single DVD. You can specify the chapter-stop intervals, and even whether to make the disc play automatically when dropped into a set-top player.

Connect the DVDirect to a PC via USB, install the bundled *Nero* software, and you've got a DVD burner capable of writing at 16x to DVD+R media rated for that speed, and at 8x to DVD-R media (if you can find it—no one could supply us with any at press time). At 16x, we wrote 4.25GB to a disc in six minutes flat. Burning 8GB to double-layer media took just 43:11 (min:sec)—so there are no speed issues with this drive. The DVDirect would not, however, burn at speeds exceeding the media's rating

If you don't already have a DVD burner, chances are it's because you've been waiting for a drive like the DVDirect: one that makes converting analog sources to DVD-Video truly effortless; and one that supports disc-burning speeds that exceed what most folks can afford in media anyway. It should be noted, however, that recording an analog signal direct to DVD with this device, but without a PC, can be done only with the DVD+R format. This will produce discs that are compatible with fewer older set-top DVD players than DVD-R discs are. The drive also lacks a FireWire port (yes, we know that creating DVDs from FireWire-equipped DV cams is already a breeze). And the DVDirect was unable to record *any* of our commercial VHS tapes, not even our aged *Schoolhouse Rock* compilation. But we can buy that on DVD—not so with our company-weekend videotape, which will now be around for a long, long time.

—LOGAN DECKER

MAXIMUM PC VERDICT 9

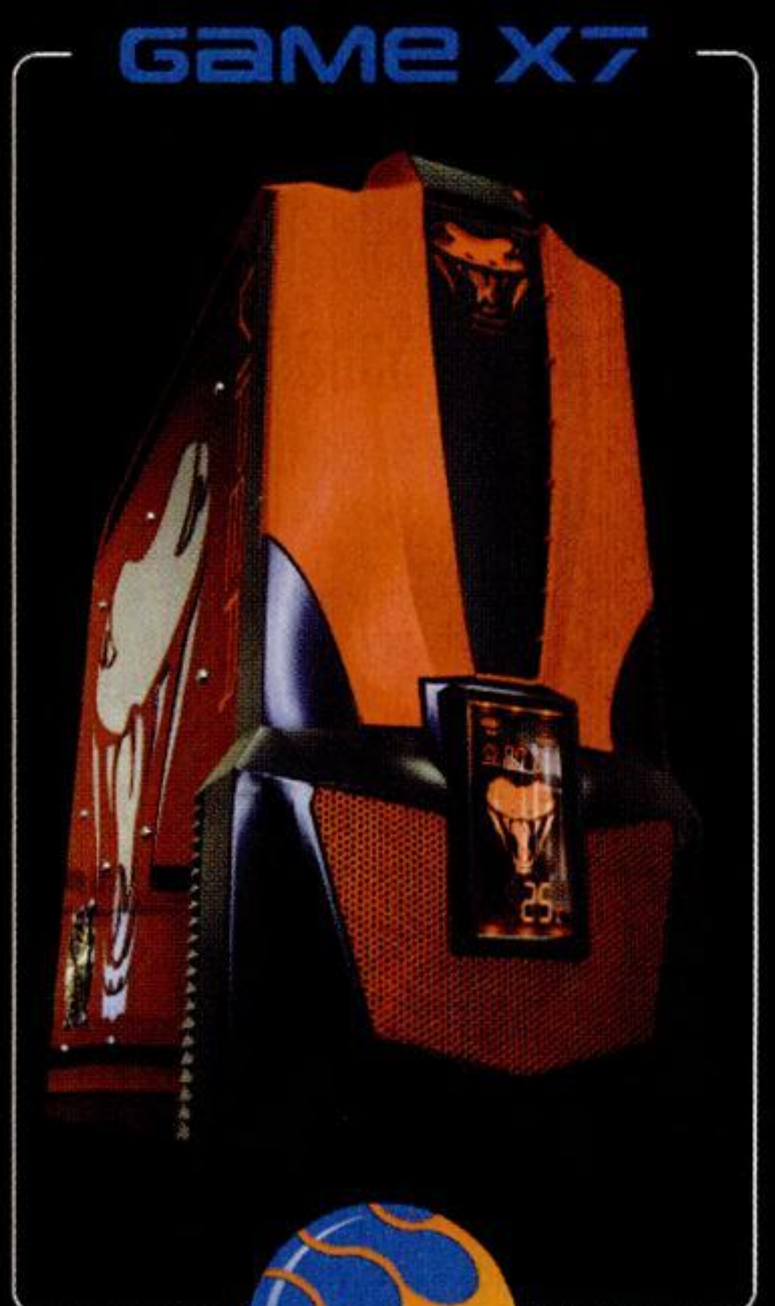
+ COPYRIGHTS

By far the easiest and most convenient way to archive analog media; fast burner.

– COPYWRONGS

Doesn't permit recording of copyrighted material, won't exceed rated media speed, and very expensive.

$300, www.sonystyle.com



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AeroCool Spiral Galaxies

It would be best to keep this galaxy far, far away

While the Spiral Galaxies case is extremely roomy, the spaciousness requires extremely long cables for everything from the PSU to the hard drives and optical drives.

Back in November 2004, we reviewed a case from Silverstone that was strikingly similar to this AeroCool unit—the only major difference being the front bezels. Like Silverstone's TJ06, the Spiral Galaxies (who comes up with these names, anyway?) sports a unique "reverse ATX" chassis that opens on the right and requires the ATX motherboard to be mounted upside down. This puts the CPU at the bottom of the case, smack-dab in the middle of a wind tunnel created by twin 120mm fans on either side of the motherboard. The vortex is enhanced by a massive plastic shroud that clamps down over the top of the motherboard. Although this cooling design could be beneficial for overclockers, it's a pain in the butt to affix or detach the shroud, which is largely unnecessary for conventionally clocked PCs.

We also had problems this time around getting the power supply cables to reach the motherboard. Because the PSU resides at the very top of the full-size tower, while the motherboard is located at the very bottom, you need super-long cables to span the two. The exact length of cable varies depending on the location of the mobo's ATX power connector. If the connector is above the CPU—as was the case with our mobo—you could be SOL. Not even the extra-long cables that came with our PC Power and Cooling test unit would reach. This is a big, big problem.

Another annoyance is the hard drive cooling situation—or lack thereof. The Spiral Galaxies doesn't include any dedicated fans for the drive cage, so cooling duties have to be handled by a fan on the bottom of your PSU, provided it has one. Also, like the PSU cables, hard drive cables have to be lengthy given the drives' location up at the top of the case.

This case might boast a unique design, but clearly it's more trouble than its worth. Take it from us: Stick with standard ATX for the time being.

—JOSH NOREM

MAXIMUM PC VERDICT 5

+ FULL-SIZE TOWER

Interesting design and roomy interior.

– FULL-SIZE TUMOR

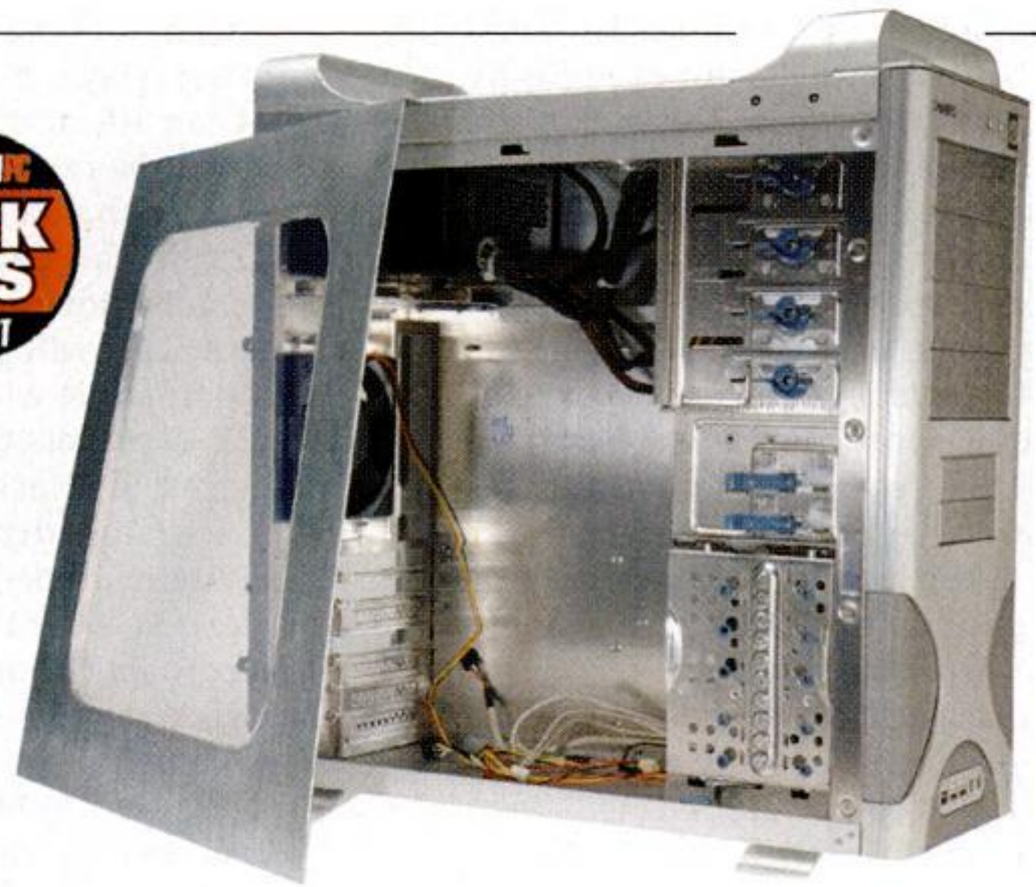
Needs really long power cables, and the cooling shroud is a PITA.

$95, www.aerocool.us

Chenbro Gaming Bomb II

It really is the bomb

MAXIMUM PC KICK ASS PRODUCT



The Gaming Bomb II is full of trick features, including a removable hard drive cage that can be rotated to face either the rear or the side.

Even though the original Gaming Bomb was as light on features as it was on the wallet, its successor is so replete with goodies we're declaring it one of the best cases we've ever reviewed.

Where to begin? For starters, the Gaming Bomb II's all-aluminum construction makes it incredibly light, but it's still pleasingly sturdy. What's more, if you're the LAN-gaming type, your chiropractor will appreciate the carrying handles mounted on top, while you'll enjoy showing off your PC's naughty bits via the large side window.

Thanks to a stellar design and tool-less drive bays, working with the GBII is practically effortless. Optical drives and hard drives lock down with the twist of a lever, and the removable motherboard tray and external PSU installation make inserting the tangly components a profanity-free affair. But the coolest feature of the GBII is its removable six-bay hard drive cage and the *ginormous* 120mm fan dedicated to it. Once loaded up with drives, the cage can be returned to the case with the drives facing toward the motherboard or sideways toward the window for quick drive-swapping. It's a simple innovation, but a welcome one nonetheless.

Cooling options consist of the aforementioned 120mm fan in front of the hard drive cage, a 120mm fan above the AGP slot for exhaust purposes, and an empty 92mm fan bay on top of the PC that uses a tool-less locking mechanism, so you can simply slide a fan into place and connect it to the PSU for additional cooling.

Other notable features include front-mounted USB, audio, and FireWire ports; the ability to route power cables behind the motherboard tray, for tidy wiring; and an overall elegant aesthetic that is decidedly more sexy than the original Gaming Bomb.

Color us impressed. Our only gripe is that the GBII is not a full-size tower, which we think is necessary for ultimate dream-machine configs. But as far as mid-towers go, this case is definitely a hit.

—JOSH NOREM

MAXIMUM PC VERDICT 9

+ GAMING

Tool-less, lightweight, and sturdy, with cool features.

– GROOMING

Mid-towers in general aren't suited for dream-machine duty.

$223, www.chenbro.com

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Supports both INTEL & AMD (Socket 478, 462, 754, 939, 940)

- Does not generate noise or vibration in Silent Mode.
- Pure Copper and Pure Aluminum base materials ensure excellent heat dissipation.
- 92mm fan inside the FHS maximizes airflow and makes installation easier.
- Adjustable fan speed controller (FAN MATE 2) enables control of noise and fan performance.
- To use this product on Socket 775, ZM-CS1 must be purchased separately.

QUIET VGA COOLER ZM80D-HP

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Prince of Persia: Warrior Within

He's back, and he's got a big-ass chip on his shoulder

The Prince's enemies are many and nimble, but now he's got the moves to send 'em all to kingdom come.

In last year's *Prince of Persia: The Sands of Time,* the Prince was one cool dude who kicked ass with style and grace in a resplendent 3D world that brimmed with challenging environmental puzzles. It was a stunning, rousing success... on the consoles, that is.

Sands of Time may have *looked* the best on a PC, which is to be expected, but it played the worst—thanks to abysmal out-of-the-box gamepad support. Sadly, controlling the Prince's awesome array of acrobatic moves and zombie-slicing skills was far too klunky a proposition for the keyboard and mouse.

In *Warrior Within,* we're pleased to find that the gamepad oversight has been rectified, as are most of our complaints about *Sands of Time.* Gone are repetitive combat (enemies respawned when you re-entered a room), an irritating save-point system (save points were few and far between and would appear only after you cleared out waves of enemies from a room), and brevity (about 10-12 hours to complete).

The biggest improvement is the new "button-mashing free" control scheme. You can now execute precise combos on multiple enemies using any dual analog controller. Enemies no longer respawn, save points are distributed more frequently about the levels and don't require room-clearing to activate, the game's a bit longer (15-20 hours), and the swooning camera issue is much less frequent.

Back all these improvements with an engaging story that has the Prince going back in time in an effort to save his own life by circumventing everything that happened in *Sands of Time;* toss in a much deeper combat system that includes dozens of eye-popping combo attacks; sprinkle in some nifty new time-manipulation effects; and you have a recipe for a sterling sequel that shines just about everywhere you look.

The movie sequences do suffer from some audio-lag and stuttering, and some fans of the POP franchise might not like the Prince's new darker, grittier, broodier look and personality, but we're big fans.

Other than these minor issues, we're fresh out of complaints: *Warrior Within* is one of the best action/adventure games we've played on the PC in years.

—STEVE KLETT

MAXIMUM PC VERDICT 9

+ PRINCELY

Solid gamepad support, no more respawns, lots o' new combat moves, and a gritty makeover.

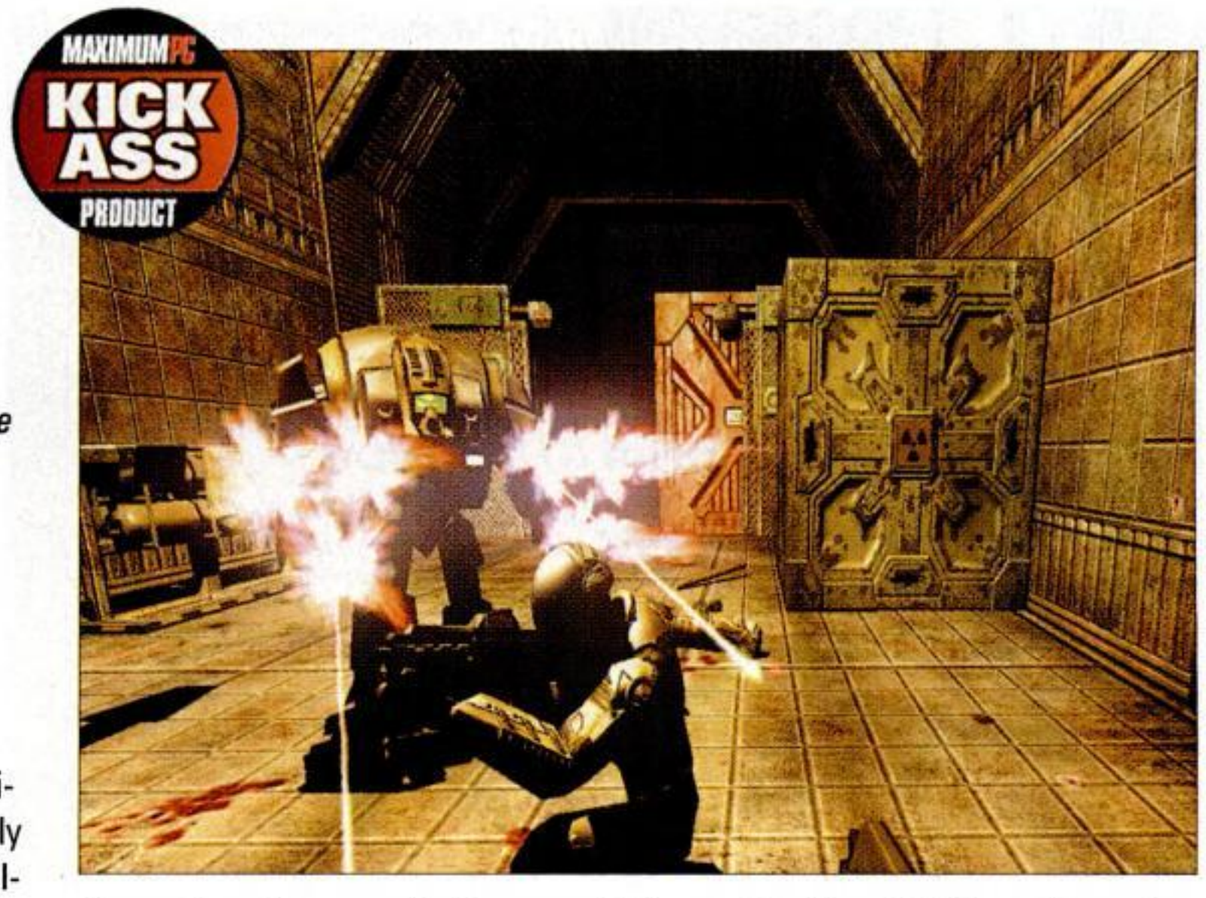
− PRINCE-LESS

Minor audio and movie glitches, and the camera still gets in the way occasionally.

$40, www.princeofpersiagame.com

The Chronicles of Riddick: Escape from Butcher Bay, Developer's Cut

Escaping from prison has never been so much fun



Occasionally you find yourself in a stand-up fight and you're usually outnumbered. Our advice: bring guns!

There's plenty to be suspicious of regarding *Chronicles of Riddick: Escape from Butcher Bay.* Any game drawn from a recent action flick is cause for concern. The same goes for any console FPS ported to the PC as a special "Developer's Cut." But *Riddick* is a surprisingly enjoyable game that mixes traditional stealth gameplay with RPG-like character interaction to create a first-person experience that delivers equal amounts stealth and action.

Imprisoned in a super-penitentiary, Riddick must interact with the NPC inmates and guards to procure items such as weapons, cigarettes, and cash. Naturally, Riddick will frequently need to smash skulls, which an intuitive melee combat system makes easy. Some fights seemed too easy—early enemies go down after a single hit—but the fights become much more challenging late in the game.

When Riddick sneaks out of the cell blocks, the game switches to stealth mode. You're able to creep past guards or stab them from behind. The game makes it easy to know when you're hidden. When you switch into the stealth mode by ducking, your screen turns blue. The darker the blue, the better hidden you are. After a little while, Riddick gains his trademark night vision, opening new opportunities to wait in darkness for guards to turn their backs.

Sneaking is never as fun as shooting though, and Riddick boasts extremely solid first-person-shooter action. In comparison to other recent shooters though, the enemy AI in *Riddick* is just plain dumb. Prison guards fail to use cover effectively and exhibit an out-of-sight, out-of-mind mentality. As soon as you get 20 feet from a pursuer, he forgets you were ever there and goes back to his business.

We dig the way *Riddick* mixes disparate genres enough to forgive its woefully short 12-hour playtime. However, we must add that every moment of those 12 hours is a treasure.

—MARK NOACK

MAXIMUM PC VERDICT 9

+ PITCH BLACK

Great character models and easy-to-learn gameplay. Bargain bin price!

− CHRONICLES OF RIDDICK

Occasional shadow-rendering problems and hit-or-miss enemy behavior.

$30, www.vugames.com

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Scrapland

Scrappy equals crappy

Scrapland joins the crowded ranks of third-person games inspired by *Grand Theft Auto*. Although the game's box says "American McGee presents...", this game doesn't exhibit the level of polish we expected after playing McGee's last game, *Alice*. In short, *Scrapland* delivers a few memorable moments, but its bland plot and one-dimensional gameplay ultimately fall flat.

The game has you play D-Trius, an android journalist and resident of the huge metropolis of Scrapland. The game is split into two parts: pedestrian (no pun intended) scenarios where you wander through buildings, and flying sequences where you soar above the city streets. Traversing the neon expanses of Scrapland can be visually pleasing, but the thrill wears off once you notice the recycled textures and nonsensical building design. Advancing from one task to the next quickly becomes a bore.

The game tries to mimic *GTA's* gameplay (go to point A, kill guy B, talk to person C), but it fails to deliver *GTA*-style thrills. Mission battles can be entertaining—even spectacular—the first time around; constant repetition, however, quickly drains all joy from the experience. Dogfights involve little more than simple maneuvering to lock onto your opponent, and then firing a few easy shots to blast him to oblivion. Seconds later, the very same opponent respawns and you must defeat him five more times. This is neither fun nor challenging; it's just tedious. Pedestrian combat is equally monotonous.

The one bright spot in this otherwise abysmal game is the character-morphing system, which allows you to assume the identity and abilities of any other android class. Although we enjoyed playing as the roughly 20 different available androids (with their corresponding abilities), most have no real strategic use. All the pretty lights and bright colors in the world amount to nothing if the game isn't fun to play.

—MARK NOACK

Scrapland doesn't skimp in the graphics department, but leaves a lot to be desired in the fun department.

MAXIMUM PC VERDICT 5

+ ANDROID PERFECTION

Impressive graphics, but you quickly run out of fun things to do.

− HUMAN ERROR

Repetitive gameplay and a lousy storyline.

$30, www.scrapland.com

Saitek X-52 Flight Control System

A whole lotta stick for just a little money

Don't let the gimmicky array of blue LEDs fool you, Saitek's new X-52 is not only the most capable PC hands-on-throttle-and-stick (HOTAS) we've ever seen at this price point, it's also the most flexible.

Only Andre the Giant would be comfortable with the orientation of this system right out of the box, and we found the throttle much too loosey-goosey. No problem: You can quickly adjust both the joystick's hand rest and the throttle's tension. The throttle also includes detents for idle and afterburner settings, and every button on both the throttle and joystick can be easily programmed using *Saitek's Smart Technology* (*SST*) software.

A fancy-pants LED multifunction display adorning the throttle tells you which mode the X-52 is in, as well as the name of the command assigned to a given button once the button is activated. The throttle also houses a thumb-stick mouse controller, which is handy for in-game camera and navigation control.

Flight-sim purists might prefer the more realistic looks (and heft) of Thrustmaster's or CH Products's offerings, but these sticks run $300 each, plus $150 for rudder pedals. The X-52 can do just about anything these sticks can, for less than half the jingle—and offers the addition of adequate rudder controls on the stick (left/right twist). If you don't like to twist, the device will work with third-party USB rudder controls.

Unfortunately, while the SST software makes it easy to program basic functions, assigning more complex commands to rotating and sliding buttons can be difficult—and the documentation is sparse. Veteran pilots who require ultimate precision might find the stick's dead zone a bit too generous.

When all is said and done, however, the X-52's price, features, and flexibility make it a solid choice for budding Top Guns.

—STEVE KLETT

The X-52's array of blue lights might seem gimmicky, but the throttle's multi-function LED is both ground-breaking and highly useful.

MAXIMUM PC VERDICT 9

+ RED BARON

Great price! Extremely flexible, comfortable, and fun to use.

− SNOOPY

Tough to program advanced functions; should not be used with USB hubs; not the best choice for ultra-precision flying.

$130, www.saitekusa.com

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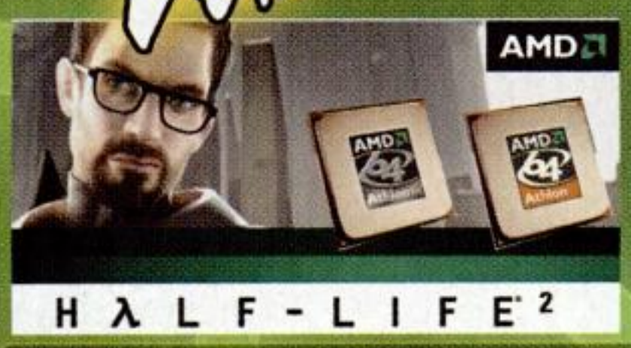

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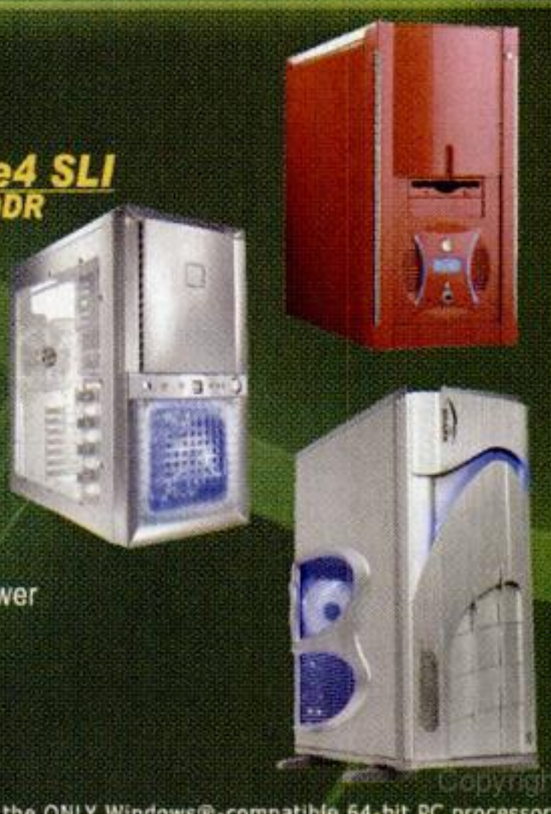

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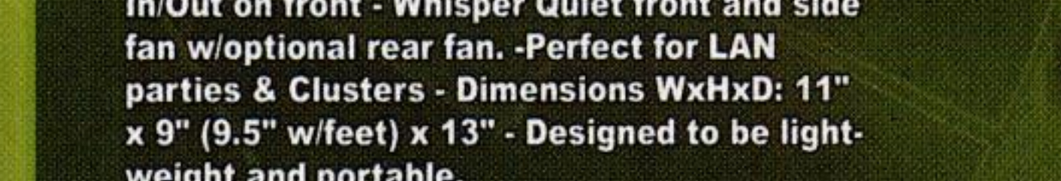

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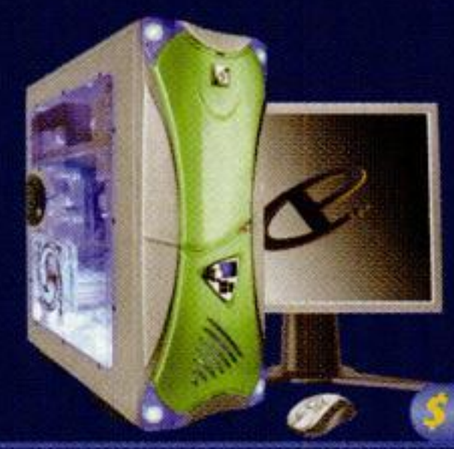

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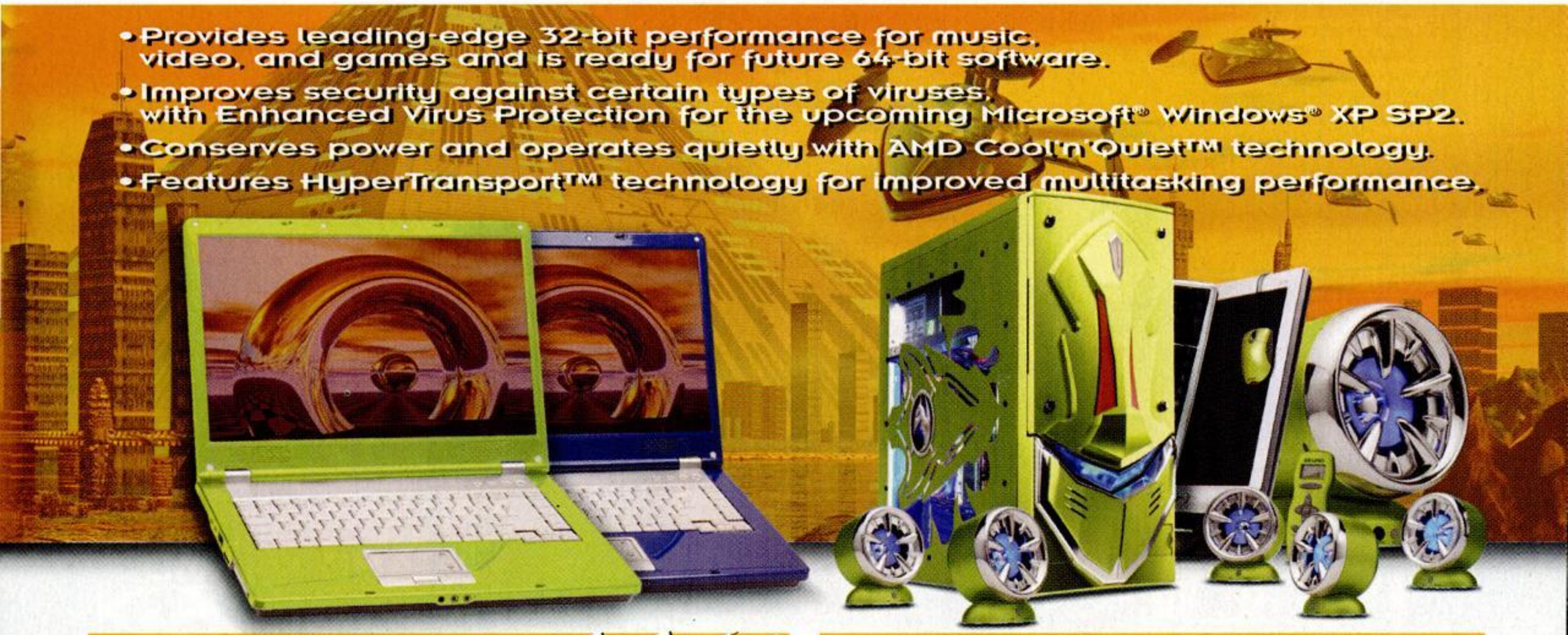

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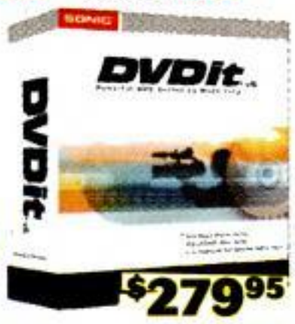

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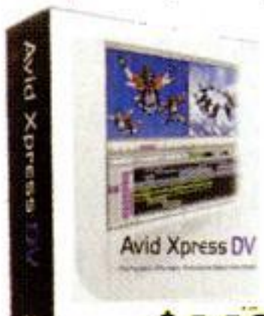

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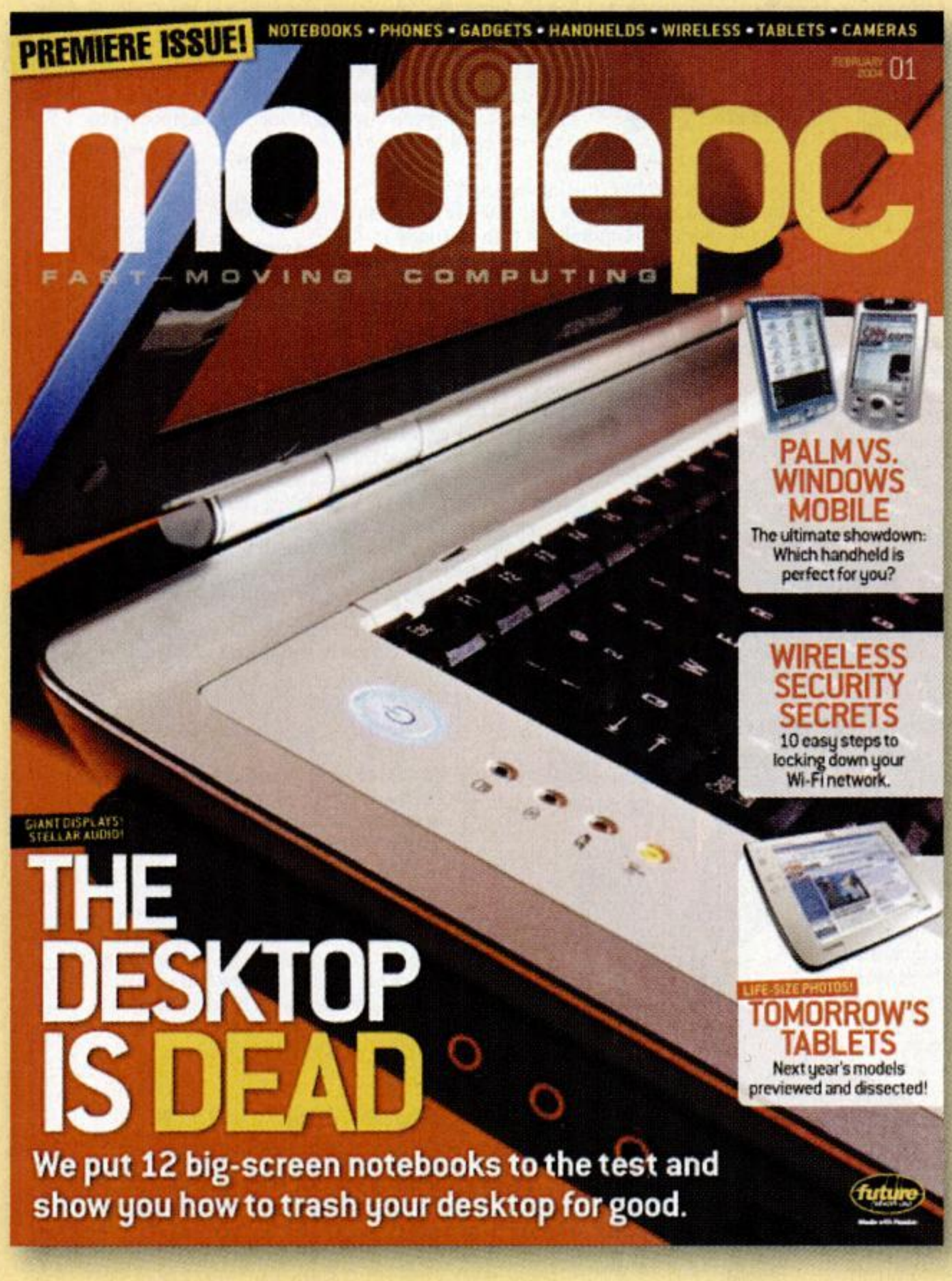
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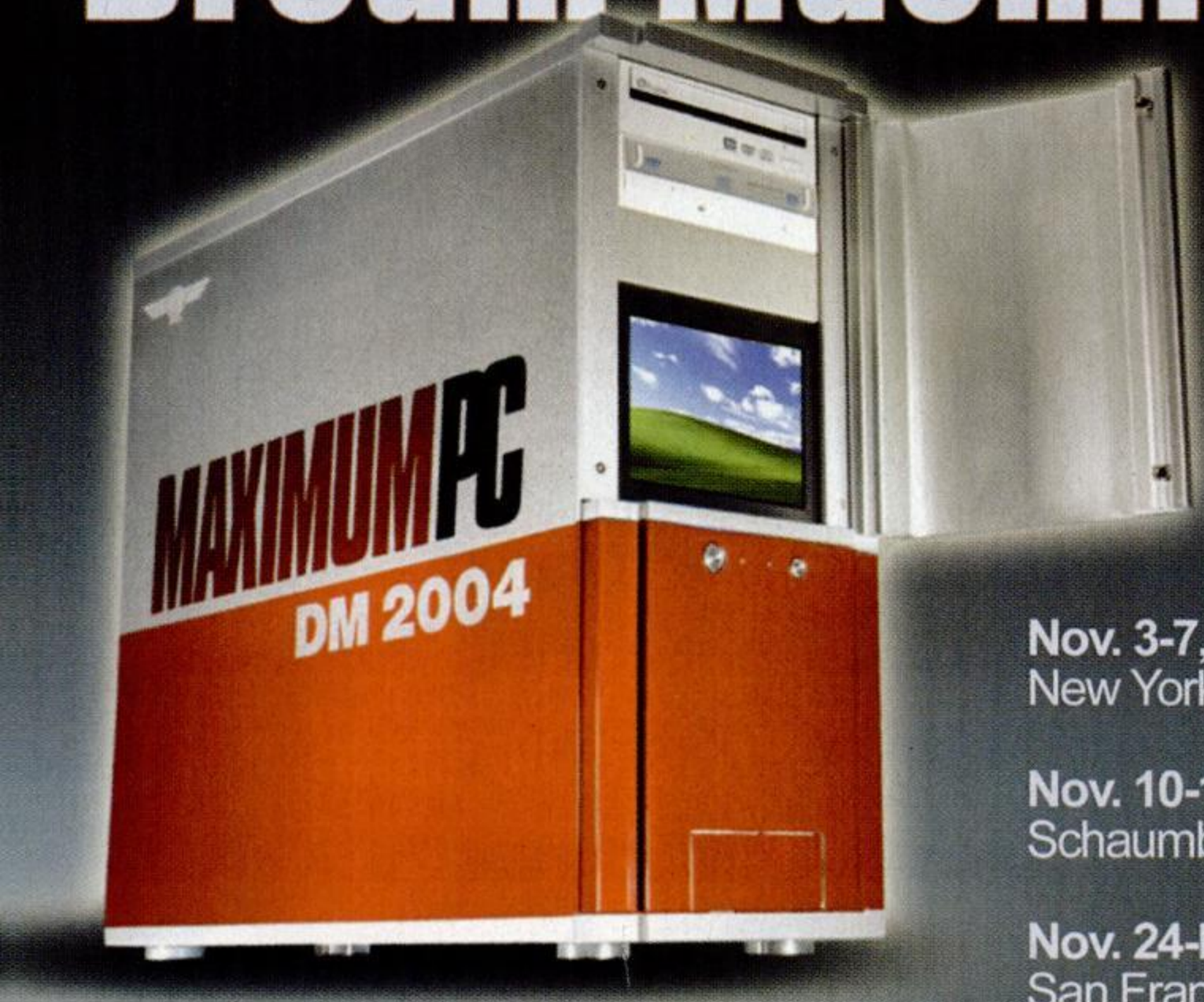

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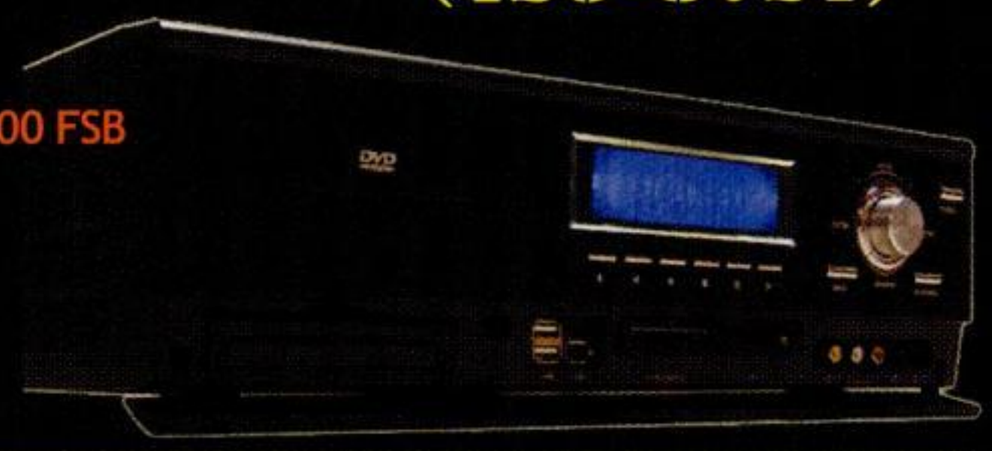

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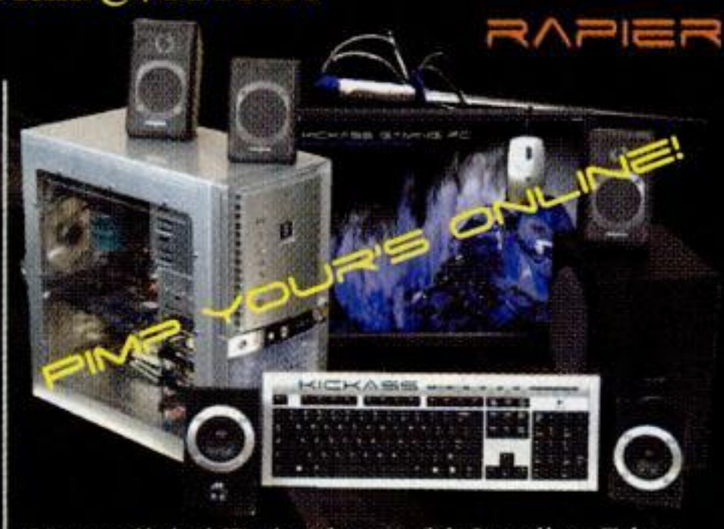

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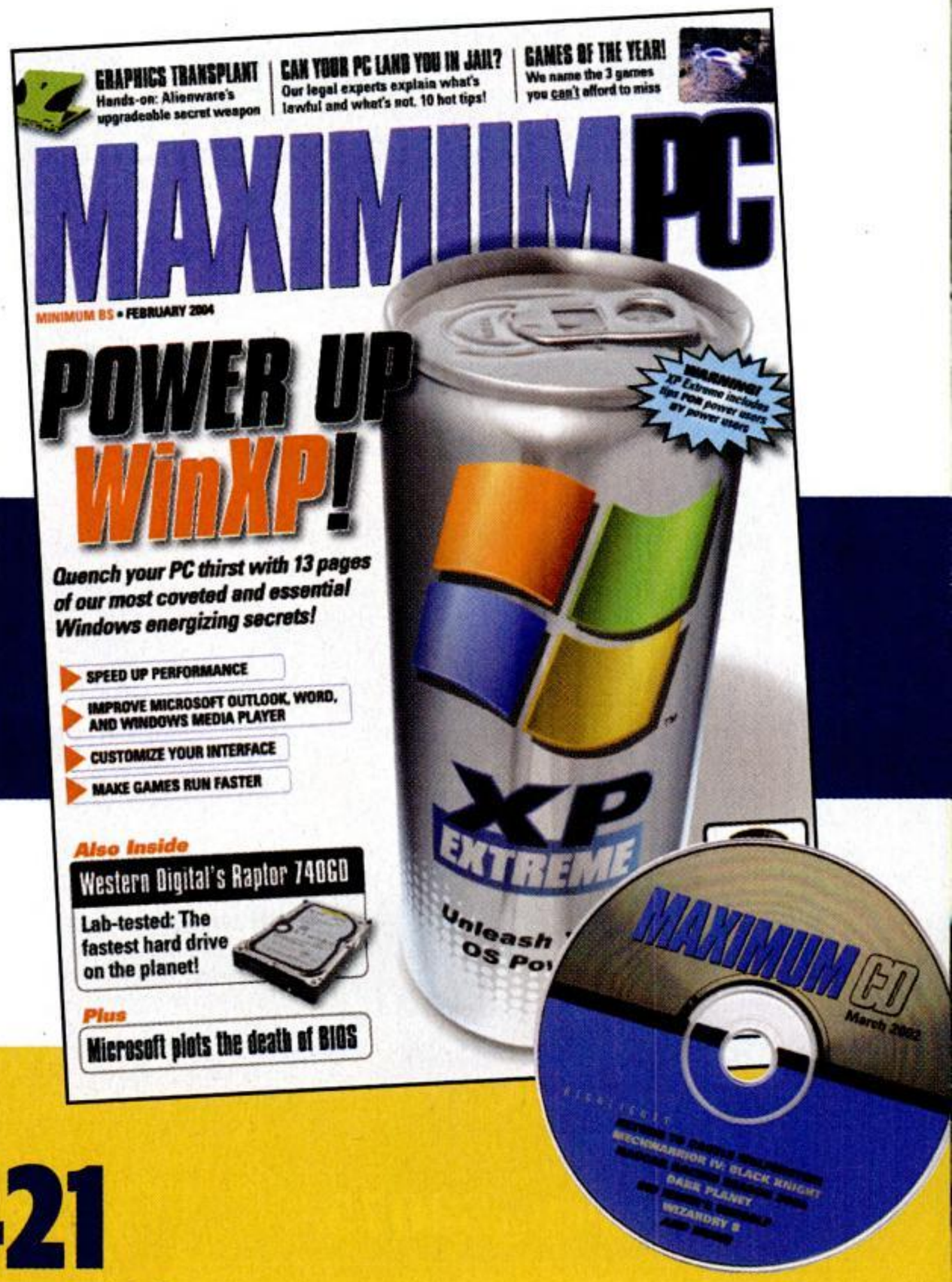
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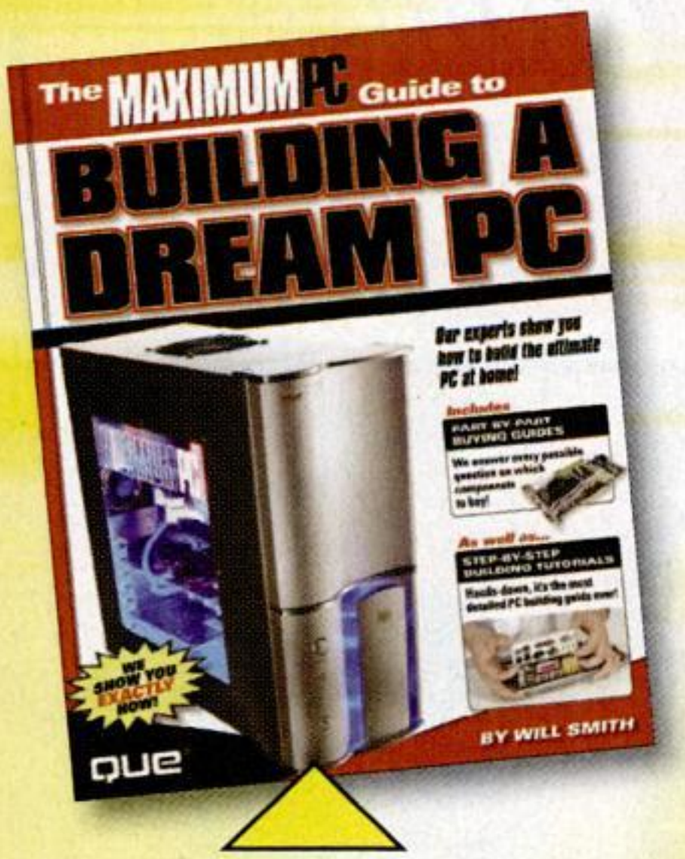
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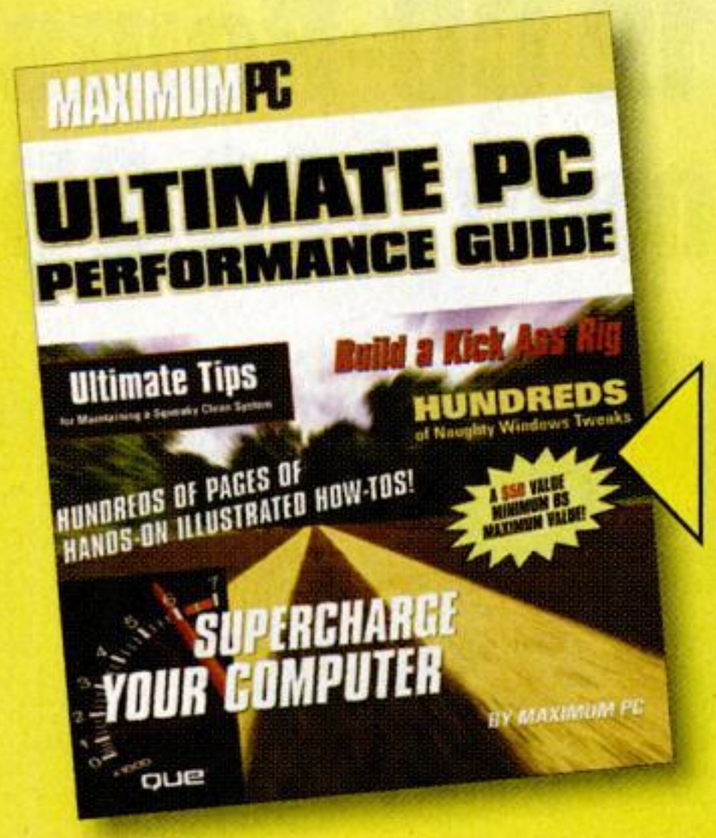

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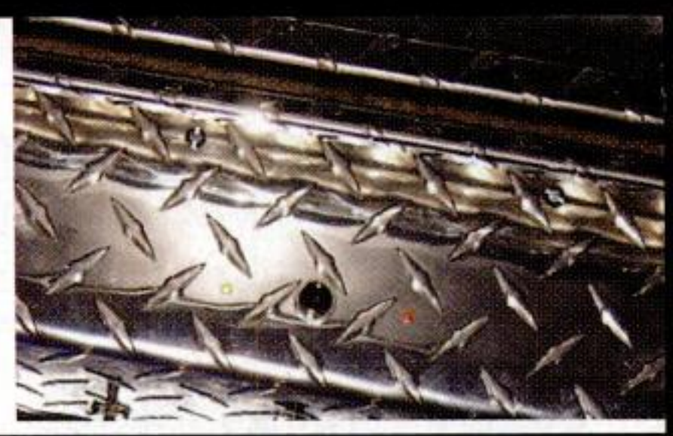
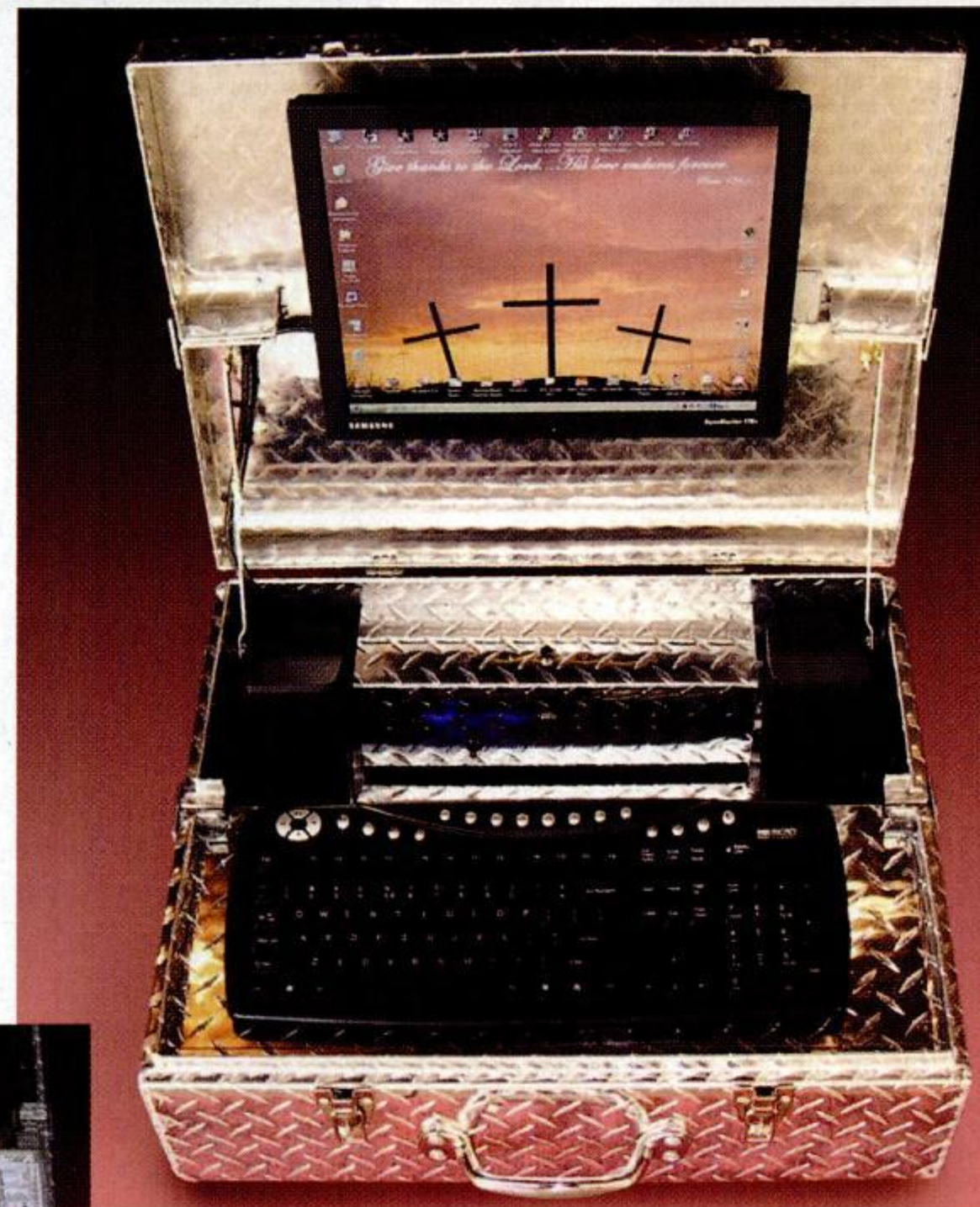


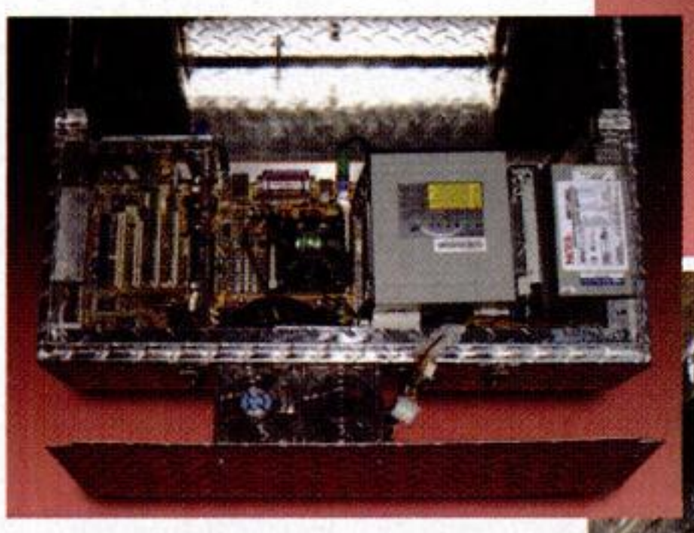
THIS MONTH: Dan Kane's Toolbox PC

Dan Kane knew precisely what he wanted from a PC. He wanted something portable to accompany him to LAN parties, long stays away from home, and even camping trips. He wanted that portability in a single self-contained unit—keyboard, mouse, speakers, etc., all included. He wanted something with the muscle to match today's games. And he wanted something upgradeable. Such was the thinking that went into his Toolbox PC. That the rig seems able to weather a tour of duty in Fallujah is just icing on the cake.

Kane's biggest challenge was coming up with a suitable enclosure. Ultimately, he decided to cut, grind, and bolt together *two* Sear's diamond plate toolboxes. The resulting case not only holds everything Kane needs for power-user computing on the go, but it looks pretty darn cool to boot.



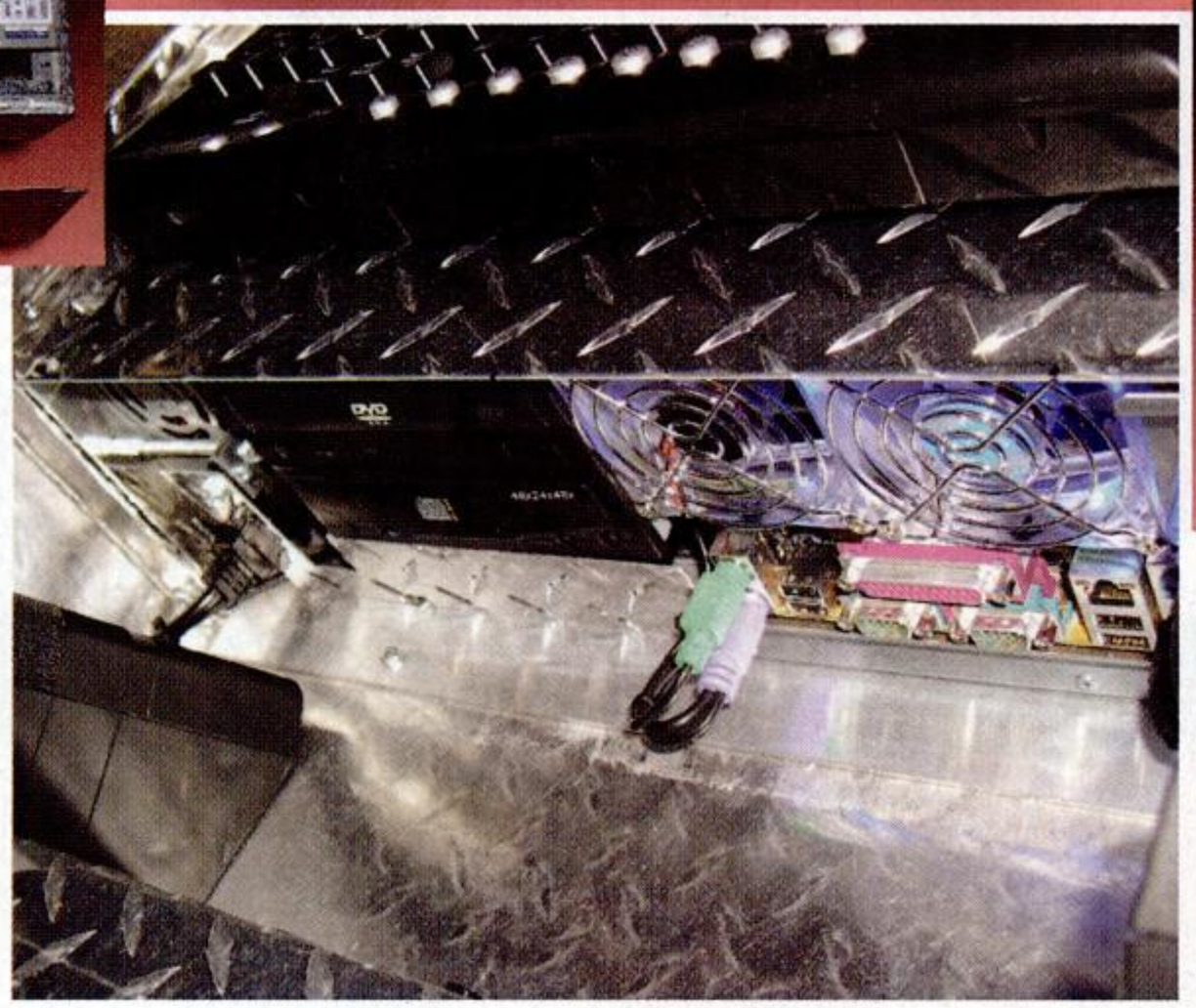
OK, so at 9.25x24x19.5 inches and a weight of 50 pounds, the Toolbox PC isn't something you'd take on a long hike, but Kane is able to easily transport the rig by its handle with just one hand.

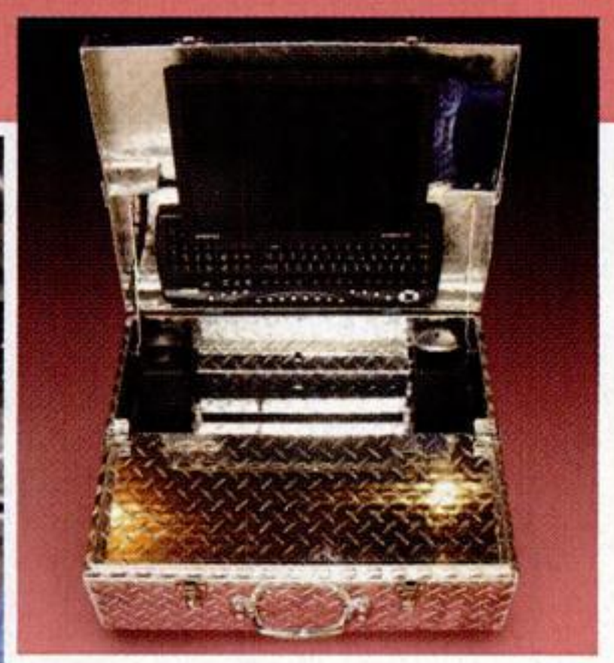


In the image above, you can see how a piece of diamond plate conceals the PC's innards and serves as a work surface for the keyboard. L-brackets inside the case keep the cover in place and away from internal components.

When the cover is on, the two fans bolted to it fit snugly between the drive rack and the PCI/AGP-card mount, managing the case's climate.

To the right is a glimpse of the internals beneath the cover plate from the opposite side.





In transportation mode, the keyboard and mouse pad are conveniently stored behind the monitor, the mouse is Velcro'd to the top of one speaker, and the wireless transmitter for the mouse and keyboard is Velcro'd atop the other speaker.

If you have a contender for Rig of the Month, e-mail **input@maximumpc.com** with high-res digital pics and a 300-word write-up.

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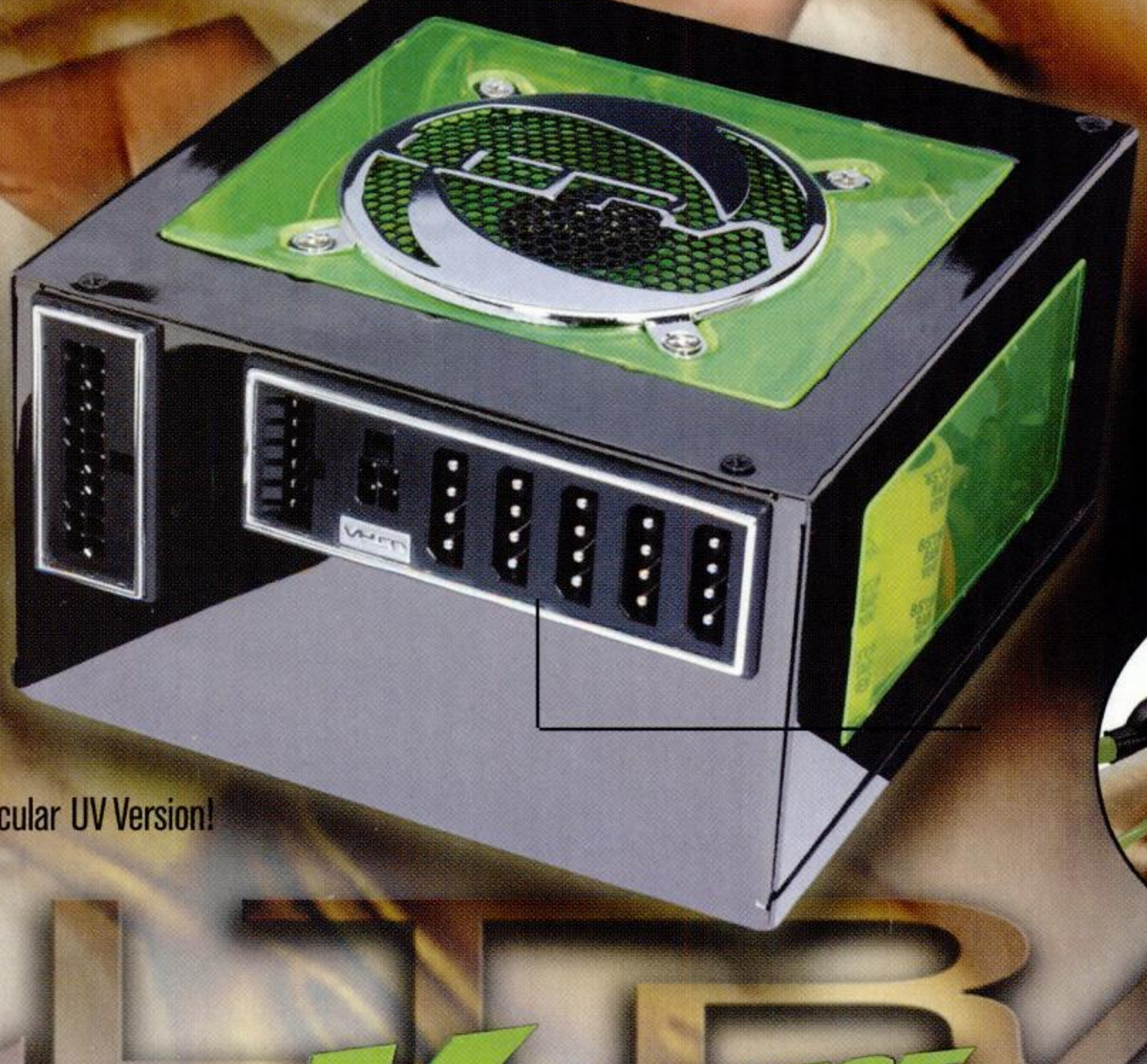

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